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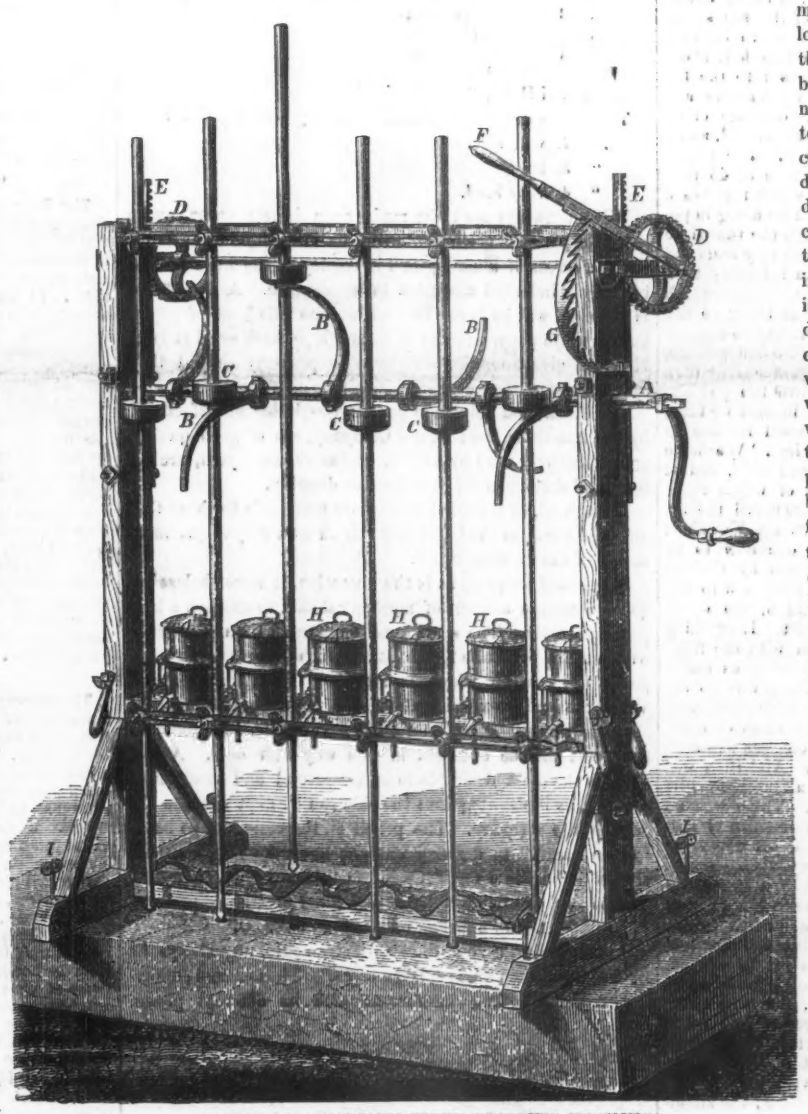
STONE-DRILLING MACHINE.

The annexed engraving represents an improved machine for drilling and quarrying stone, marble, &c. It can be worked by hand, steam or other power; is simple and portable, and not liable to get out of order. By reference to the representation, it will be observed that a wooden frame, consisting of two vertical posts, and braced resting-pieces, or feet, support and give bearing to the shafts and other iron connections. There are six drills, which are all raised by a revolution of the cam shaft, A, on the extremity of which is shown an ordinary crank, for hand-power. The drills are turned as well as raised by the cams, B, which, striking on the convex under side of the disks, C, give the drills a partial rotary motion as they are lifted, similar to that by the hand, in the single ordinary stone drill. The drills can be arranged at any required distance, one from the other, by means of adjustable eyes, set in the parallel or slotted bars at the top and near the bottom of the frame. As the drills work down into stone, the shaft, A, is lowered by the spur wheels, D, on a shaft passing across the frame, working in thee sliding racks, E, to which the cam shaft boxes are attached, and is held in position by the catch lever, F, and segmental ratchet, G. The holes are moistened by water from cans, H, which have their spouts adjusted so that the water runs down on the drills and into the holes. The cams are adjusted by set screws working in longitudinal grooves in the shaft on which they are fixed, and the water cans are secured at any distance apart by bolts passing through a slot in the cross-bar on which they stand. The screws, I, through the feet of the frame, are for leveling the frame when standing on rough, for uneven surfaces.

At a recent trial of one of these machines we witnessed its successful operation. A slab of Hudson bluestone, that was uncommonly hard, was put under the drills, when they cut six smooth holes, one inch deep and one inch in diameter, in one minute. This was accomplished by an operator turning the crank a few times, and using only one hand. These machines are being built at the works of the Holske Machine Co., No. 528 Water street, New York City. The improvements were patented by A. M. Southard and W. G. Hobson, Sept. 3, 1867, and April 28, 1868. All orders for machines and inquiries for information, may be addressed to the patentees, care of the Holske Machine Co. Testimonials from competent judges who have tried, and are at present using, the machines, testify to the economy, simplicity, durability and portability of these stone-drilling machines. Messrs. Filley & Co., of Grafton, Illinois, are using about twenty of them, and this fact goes to prove their complete efficiency and usefulness.



SOUTHARD & HOBSON'S STONE DRILLING MACHINE.

Artificial Manures.

The value of guano and most other concentrated manures, consists to a considerable extent in the ammonia which they contain. The fertilizing action of ammoniacal salts is a fact of great importance, and the production of ammonia at a low price, a problem of the highest interest to agriculture. In addition to the ordinary manures which are produced upon the farm, modern agriculture avails itself of various other materials capable of restoring to the soil the elements removed by tillage. We may mention calcareous marl which abounds in a great many lakes and marshy grounds throughout Canada. Being almost pure carbonate of lime, it constitutes a valuable manure for soils in want of this element. One of the most important discoveries of modern science to agriculture, is the value of phosphates as a manure. The beneficial effects of ground bones, and of Peruvian guano, of which last about 30,000 tons are annually imported into Great Britain alone, are in a great measure due to the phosphates which these manures furnish to the soil. Within a few years the use of soluble phosphates or superphosphate of lime as an application to the soil, has been so widely extended that its manufacture has become a very important branch of industry in Great Britain, France, Germany, and the United States. It has also within the last few years been successfully attempted at Montreal. The phosphates employed for this purpose are bones, certain kinds of guano, and coprolites, the latter being a fossil form of phosphate of lime abundant in some parts of England and France. The attention of speculators has been turned to the deposits of crystalline mineral phosphate of lime (called by mineralogists apatite,) which is found to some extent in Norway and Spain. Geological investigations have shown that it exists in abundance among the Laurentian rocks of Canada. Veins of this mineral are met with along the Ottawa; more frequently, however, near Perth, upon the line of the Rideau Canal. In 1864 a New York company spent a large sum of money in opening several veins of this phosphate, with a view to extended mining operations. In order, however, to convert this mineral into superphosphate, a large quantity of sulphuric acid is required. Farmers are beginning to appreciate the value of the superphosphates as manures, and it is to be hoped that more enlightened notions of agriculture will bring forth in the end gratifying results. William L. Bradley, of Boston, Mass.; the Mapes Super-Phosphate of Lime and Guano Co., New York; and Messrs. Woolston, of Baltimore, Md., are among the successful manufacturers of superphosphate of lime and concentrated manure.

Interesting to Iron Workers.

The following summary of a paper read by Mr. I. Eichhorn, at the Institution of Mechanical Engineers, we take from the London *Mining Journal*. If there should be any real merit in this new invention, our iron men ought to know it. In the revolutionary processes that have lately and are now taking place in the conversion of pig iron into steel, there ought to be an incentive to inventive genius, to the end that the working of the cupola furnace has not yet arrived to a state of perfection, either in point of economy or excellence of product. Perhaps there has been some real advance in the metallurgy of iron through the instrumentality of this invention. The statements are certainly worthy of careful consideration. The invention is by Mr. Henry Krigar, of Hanover. The objects of the new cupola furnace are to "concentrate the heat in the lower part of the furnace, and render the action uniform throughout the operation of melting, and to prevent the blast from injuring the heated metal by oxidizing it. The vertical shaft of the cupola, which is made rectangular in form, opens into a lower chamber, the bottom of which forms the hearth to receive the melted metal. Round the bottom of the shaft runs an air passage, into which the blast is delivered from the air main; and the blast entering through this passage cools the brickwork of the cupola, and becomes heated itself; it then passes down into the melting chamber of the cupola through two long slots in the roof, one at the front and the other at the back, extending the whole breadth of the hearth. The front of the furnace is closed by an iron door on hinges, extending the whole breadth, and lined with clay and sand on the inside; and a smaller door is placed at the back, to facilitate the drawing of the furnace after each heat. The cupola is charged from the top of the vertical shaft in alternate layers of coke and iron as usual, a filling of coke being first put in for starting, before closing up the front door. In the working of the cupola, the coke falling into the melted chamber from the vertical shaft, stands there in a heap, upon which the blast rushes through the two transverse slots in the roof; and the heat from the burning fuel being radiated into the air passage, the blast becomes prepared for combining rapidly with the carbon of the fuel before it has an opportunity of coming in contact with the melting metal and wasting it by oxidation; and the action of the blast is finished at a considerably lower level than in ordinary cupolas. The metal obtained in this cupola is found to be very fluid, more so than in an ordinary cupola, while retaining its softness; and the consumption of coke is from 1¼ to 1½ cwt. per ton of iron melted, according to the magnitude of the charge, the loss of metal in melting being only from 2½ to 3½ per cent."

A Process for Obtaining Pure Iron.

Troost gives a method of obtaining very pure soft iron. He melts cast iron in a lime crucible by means of the oxy-hydrogen flame, directed downwards, we presume. When the metal is fused he increasses the proportion of oxygen, and thus burns away the silicon, carbon, and sulphur. The slag formed is absorbed by the crucible. When the operation is finished, a button of very pure metal remains at the bottom of the crucible. This process would be extremely useful on the large scale if oxygen could be procured at a cheap rate, but pending the discovery of means whereby oxygen can be prepared for industrial purposes, pure iron obtained in this way must remain a metallurgical curiosity.—*Mechanics' Magazine.*

Mica Spectacles.

A device simply for the protection of the eyes of persons engaged in working metals, is one of the results of an investigation by Dr. H. Cohn, an oculist of Breslau. His inquiries extended to six manufacturing establishments, embracing 599 fitters, 386 blacksmiths, 129 turners, 35 drillers, 13 planers, 27 engine-wrights, 5 screwers, 15 boiler makers, 69 foundry-men, 8 cleaners of castings—total, 1,283. He found that 90 per cent. of the workmen had often been injured on the eye by minute pieces of metal, and that 40 per cent. had been under medical treatment for serious accidents to their

eyes. Of the whole number, 59 were found to be permanently injured, and 21 of those had each lost the use of one eye. The whole time lost by the workmen from accidents to the eye amounted to 4,726 working days. No protection to the eye had been provided. Ordinary glass spectacles were objected to on account of their liability to be broken. At the suggestion of Dr. Cohn mica spectacles were tried, and found to fulfill all the requirements. The mica used is of the purest kind, about half a millimeter in thickness, and is curved somewhat like watch glass. It is held in a frame which fits close to the side of the eye, so as to prevent the entrance of particles on either side. Mica imparts a pale gray tint to objects, but does not impair the eye. Its toughness, elasticity, and transparency admirably adapt it to the protection of the eyes of metal workers. The price of a pair of mica spectacles, at Breslau, is about fifteen cents.

Blasting on a Grand Scale.

The following letter to the San Francisco *Evening Bulletin* gives an account of a great blasting which recently took place at Lime Point, near that city. The writer is a distinguished officer of the Army, who witnessed the explosion, and all his statements may be strictly relied upon:

EDITOR BULLETIN: We formed one of a small party of gentlemen who witnessed some big blasting at Lime Point on Saturday last. You must know, Mr. Editor, that the Government is about beginning the construction of a twin fort to the one at Fort Point, on the other side of the entrance to the harbor, which is called Lime Point. The preliminary arrangements, such as quarters and mess houses for workmen, workshops, roads, wharf, etc., were begun last fall, and appear to be now in a complete condition. The work is in charge of Colonel Mendell, of the Corps of Engineers. It so happens that the proper site of a fort is covered by a high rocky hill which rises from 250 to 300 feet above the level where the fort is to stand. It becomes necessary, therefore, to clear away this hill before beginning the construction of the fort. The blast on Saturday last was the first that has been made, and, being one of the largest and most successful that has ever been made in the country, I have thought that a short description of it would be interesting to your readers. Imagine, then, the straight face of a rocky hill rising out of the water to a height of 250 feet; the face of the hill standing, not vertically, but at a slope of about forty-five degrees. Imagine a small tunnel bored straight into this hill, about twenty feet above the water. The tunnel goes into the hill a distance of about 60 feet; it then turns at right angles, and runs parallel to the face of the hill for a like distance of 60 feet. At the end of the tunnel a chamber is excavated, and a charge of 4,000 pounds of powder is put into it. The tunnel is then filled up with clay and sand for a distance of 45 feet, where another chamber had been excavated, which receives a charge of 3,500 pounds of blasting powder. This being in position, and a wire led from each charge through the tunnel to the outside, the whole tunnel was filled up with clay and sand to its mouth. The wires from the mines were led away to a small box called Beardslee's Magneto Electric machine, which had been placed in a secure position, the object being to fire both charges simultaneously. Here, then, we have two charges of powder, one of 4,000 pounds, the other of 3,500 pounds, placed forty-five feet apart and fifty feet from the face of a rocky hill, the hill rising some 250 feet above the powder. We are going to explode them; at the same instant of time, and see what will happen. It has been our good fortune to have seen much heavy blasting in our lifetime. We have witnessed the construction of the Baltimore and Ohio, and of the Hudson River railroads, many portions of which roads were blasted out of the solid rock, and we have heard the artillery of the Central Pacific railroad in the Sierra Nevadas; but never before had we seen a blast like the one now to be made. The subject had been fully investigated by Colonel Mendell, and the quantity of powder duly proportioned to the work to be done, but still, before the explosion, the whole thing was looked upon as an experimental blast. Everything being in readiness, the wires were connected with the little box, the machine set in motion, and the connections made, when lo! the mountain was seen to labor. There was no explosion in the popular sense of that term. A little smoke and flame were seen to escape through the moving mass of rock, and the whole face of the hill in front of the charges was seen to move outward, falling down into the sea. And then was seen a sight rarely witnessed—a hill without a foundation giving way and tumbling into the depths below. There was no noise from the powder and not a stone was thrown fifty feet from its position by the force of the explosion, yet the sight was grand, and being unaccompanied by any visible cause, was awful from its very silence. For about half a minute of time the masses of rock above came rolling down the face of the hill, to seek their watery grave below, presenting to the mind such a prolonged period of instability that one involuntarily looked beneath him to see if he too was not in motion. When the rock above had broken away to the height of about 175 feet above the water, the motion ceased, being renewed, however, from time to time, for several hours, as still other masses above, finding themselves unsupported, broke away and rolled down into the deep. The result of this experimental blast, in an engineering view, was very satisfactory. There was neither too much nor too little powder; the simultaneous explosions of the two charges were effected perfectly, and the work that was intended to be done was perfectly accomplished. A visit to the locality yesterday, revealed the fact that about 40,000 cubic yards—say 80,000 tons of rock had been removed by the blast. Of course all of this rock was not thrown down into the sea, much of it will yet have to be rolled down by hand. Still, the result was very striking—7,500 pounds of powder moved 80,000 tons of stone, or more than ten tons per pound of powder. The economic view is perhaps still more striking. We are informed by Colonel Mendel that the cost of the tunnel, powder, tamping, etc., was about $2,000; therefore we have 40,000 cubic yards, or 80,000 tons of stone, moved, that is, shook up and broken to pieces, for $2,000, which gives the cost per cubic yard 5 cents, and per ton 2½ cents. Ought not such a result as this, Messrs. Editors, to suggest to the city authorities, or to somebody else, the feasibility and the practicability of blowing down Telegraph as well as some other hills, by which this city is environed, and its growth, if not retarded, so spread out, that it looks to a stranger on his first visit to these shores, as if the city had never been laid out and built as other cities have been, but as if it had come by accident.

Practical Letters.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

LESSONS IN MECHANICAL DRAWING—No. V.

BY T. P. PEMBERTON.

DRAWING TOOLS AND INSTRUMENTS.

We have noticed the construction and use of the drawing board, the T square, triangles, and combination rule. We will now say something concerning other tools and instruments that facilitate the construction of geometrical figures. Many students suppose that an old set of instruments, or second-hand tools of the cheapest description, are good enough for beginners. This is quite a wrong idea. We could not expect a novice in machine building to chip evenly and smoothly with a blunt chisel, neither can we expect to see a student make straight and curved lines in an artistic manner with instruments having dull points and loose joints. We, therefore, strongly advocate the purchase of the very best instruments, as the only ones that will enable the draftsman to do his work well, that will admit of easy handling, and be truly serviceable and durable. To guide the draftsman in the selection of drawing instruments we give a detailed description of those which are essential in mechanical and archictectural drawing.

LEAD PENCILS.

These are of such variety that the student might be at a loss what to select, unless instructed how to choose the proper kinds.

Pencils can be had of great hardness or softness. The grades are indicated on the pencils by different numbers or letters thus:

B B B B B B, B B B	Very soft and very black.
B B	Soft and very black.
B	Soft and black.
F	Less soft and black.
H B	Middling.
H	Hard.
H H	Harder.
H H H, H H H H H H	Very hard.

The grades are sometimes indicated by numbers thus:

No. 2. very soft.
" 3. hard.
" 4. very hard.

When drawings are to be made upon brown paper, and a soft lead pencil is used, there will be difficulty in keeping a point, whereas if a hard pencil is employed, the lines will be too deeply indented and faint in appearance. A No. 3. or H H pencil will be found to work well on this kind of paper, but on white paper such as Whatman's, a No 4. or H H H H H H will give fine, distinct lines. If properly shaped they can be kept pointed without difficulty.

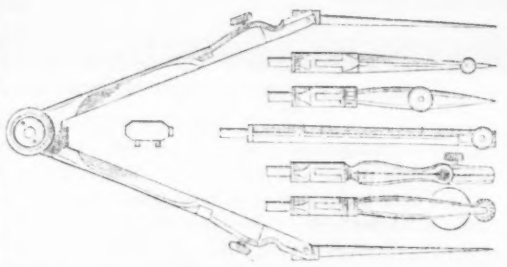
The Faber, and polygrade pencils, the latter manufactured by the American Lead Pencil Company, are of good quality, and extensively used by artists, engineers, surveyors, archictects and draftsmen for sketching or drawing.

Hexagonal, or six-sided pencils are preferable to those that are cylindrical, as the latter will roll off on a very slight inclination of the drawing board.

Simple and frequent as is the operation, it nevertheless requires a certain amount of mechanical skill to sharpen a lead pencil properly. The wood must be pared off on four sides with a sharp pen-knife for about one inch from the end, opposite the one on which is stamped the letter or figure. When the lead is exposed about ⅜ of an inch, it should be sharpened by rubbing it on a small smooth file. A round or flat point can be obtained in this way with ease. A flat point is the most desirable in archictectural and mechanical drawing, as in drawing lines the side can be kept close to the edge of the T square. The pencil is, therefore, not so liable to turn round. In drawing straight lines, the pencil should always be held in a vertical position, which enables the draftsman to stop the line exactly at any given point.

LARGE BOW PEN OR DRAWING COMPASS.

In a complete case of drawing instruments, may always be seen what are known as "large bows." The annexed engraving represents this instrument with its different pieces.



The bows are partially open and the legs shown, held in by small screws. This instrument is made of German silver, or brass, with finely tempered steel points. When these steel pointed legs are adjusted, the instrument is used for taking off large dimensions. It is from six to eight inches in length. With the instrument, there belongs a leg with a needle point, a lengthening bar, a pencil-holder, a pen for lines and another for dots. A small screw-driver is also seen in the upper part of the engraving, this is useful for tightening and adjusting he joints. This instrument is used principally for drawing the larger arcs, and the circumferences of circles that occur in mechanical and archictectural drawing. Each piece can be inserted in its socket, and removed at pleasure. The pencil point gives way to the ink-pen, and when circles of large diameter, or curves of long radius are required, the lengthening bar can be inserted, into which the pencil, or pen, is then introduced. The dotting pen is generally unreliable, and now oseldm, if ever, used by experienced draftsmen.

Mining Summary.

Montana.

Gleanings from Ross Browne's Report.

GEOGRAPHICAL FEATURES.

In this Territory the most striking geographical feature is the great range of the Rocky Mountains, extending 350 miles from its southern to its northern boundary, and in width over 200 miles. This range, with its spurs, occupies fully half the Territory. The main chain of mountains is split up into a number of different ranges, as the Bitter Root, which is the highest and the most westerly, and the Rocky, Wind River, Big Horn, and Belt ranges. All of these have a trend northwest and southeast, and all contain mines of gold and silver. Their height has not been determined, but it is probably from 10,000 to 14,000 feet, the highest peak being covered with perpetual snow. This great extent of mountain ranges causes the condensation of a large amount of moisture from the atmosphere, which falls principally in the form of snow. Gradually melting during the warm season, it thoroughly saturates the earth, inducing a fine growth of grass and timber throughout the mountain regions. The Territory is divided by these ranges into a number of basins, and their spurs subdivide each basin into a number of valleys, which contain nearly all the towns and settlements, and the greater part of its agricultural as well as nearly all its mineral resources. The mountains are greatly abraded by the agencies of rains, frosts, and glacial action, leaving them smooth and much less rocky and precipitous than the Cascade range in Oregon, or the Sierra Nevada in California. The Bitter Root is the most rugged and continuous in its height. The other ranges are full of low passes, with none of those lofty peaks that are found farther south in Colorado. All the mountains appear to be old and weather-worn, and almost at the very summits of the highest ranges beds of gravel containing placer gold have been formed from the disintegration of the neighboring peaks. Thus placer mines are found on the mountain top, differing in this respect from the Sierra Nevadas, where placer gold is almost invariably found in the foot-hills. In the Northern part of the Territory the mountain regions have been prospected only sufficiently to prove the existence of gold. The hostility of the Indians has prevented a thorough exploration, or any permanent working of the mineral deposits.

CURIOUS MOUND IN DEER LODGE VALLEY.

The Deer Lodge Mound, in the upper end of the valley, is composed of silicious and ferruginous depositions, formed by a thermal spring. It is a truncated cone 30 feet in height, 100 feet in diameter at the base, and 30 feet at the summit. Brightly colored with white and reddish-brown spots, it forms a notable landmark. In the winter, when the steam rises like smoke from a spring at the top, it bears a striking resemblance to a large Indian lodge. This spring is three feet in diameter, and of a considerable depth. The water, which does not overflow at present, is nearly at the boiling point, while at the base of the mound several springs exist, the temperature of which varies from near the boiling point to icy coldness. A marsh elevated a few feet above the surrounding plains is formed by the springs at the base of the mound. Very few such formations, caused by thermal springs, are found in the Pacific Territories. Hence it must be different from the ordinary methods of deposition. From the fact that the spring in the centre of the cone does not overflow, it is evident that in former times it must have been more active than at present, and that the forces that once gave it activity are failing; also, that unless there is a recurrence of its ancient eruptive power the mound will never rise any higher. Probably it is lower than formerly. Ordinary thermal springs throw quite a volume of water, which, gradually cooling, continues to deposit its sediment for a considerable distance, depositions not being materially greater at the mouth of the springs than 100 or 200 yards distant.

BEAUTIFUL SCENERY.

The scenery here is wonderfully picturesque. Spurs and broken chains of mountains, the lofty summits regularly dispersed, rise above and beyond one another, giving an idea of interminable distance. The rarity of the atmosphere consequent on the altitude causes the rays of light to be less strongly refracted than when the atmosphere is denser, giving a strange and unnatural reflection to every object. The light is peculiar in many respects. While it does not apparently impair vision, it seems to blend in all colors a portion of black. Thus, as the eye follows one mountain peak after another, the color becomes darker and darker, till the most distant are almost entirely black. The color of the snow, varied by increasing distance, goes through the same changes, and at last appears of a dark gray. There are none of those wondrous changes of tints and shadows which are so charming in the lower latitudes as Mount Hood, whose snows from a hundred different points of observation never appear twice of the same color. Here every tint is sombre and rigid, and notwithstanding the beauty of the scenery the mind is chilled with a feeling of awe. This is heightened by the appearance of the low hills, which are covered with grass, and have the aspect of fields once cultivated, but now permitted to return to a state of nature. In the upper part of the valley, near the hot springs, the snow seldom lies on the ground, and there is an abundance of good pasturage the year round. A curious and interesting fact connected with this locality is worthy of note. From the head of this valley into Big Hole, or the valley of Divide creek, a branch of Big Hole, is the lowest pass through the Rocky Mountains. In fact, it is simply a continuation of one valley into another. At Butte City water is brought from the head of Boulder creek, which is a tributary of the Missouri, through a low pass into Silver Bar, a branch of Deer Lodge creek, thus taking the water from the Atlantic and giving it to the Pacific.

THE BANNOCK QUARTZ DISTRICT—THE FIRST STAMP MILL.

The first quartz veins worked in the Territory were in Bannock. Grasshopper creek heads at the foot of a large smooth mountain, which abounds in veins containing gold, silver and copper. The creek then runs eastwardly through a basin, where its branches, concentrating, pass out through a limestone canyon. At the head of this canyon are quartz veins containing free gold. These veins are the source from which the placer mines on the creek were supplied. No gold is found above the veins. The croppings being prominent and conspicuous, were soon discovered, and quartz claims located. In the winter of 1862–63, two men, named Allen and Arnold, put up the first quartz mill. It was entirely of home manufacture; the irons were obtained from old wagons and fashioned in a blacksmith's shop; all the lumber used, except pine, fir and cottonwood, came from the same

source. The mill had six stamps of 400 pounds each, and was driven by water. The men who built it ran it. In a financial point of view it was a success. The ores were from the discovery claim of the Dakota, and No. 6 of the same lode. A number of mines in this vicinity were sold to parties in the Eastern States, who have expended considerable sums of money and erected several large and costly mills. In the fall of 1864 the first stamp mills commenced working at Bannock. They were only moderately successful in extracting the gold. The men who had charge were practically unacquainted with the business, and generally, as soon as they had learned to manage with more skill, they were superseded by others without experience, and the same process repeated. One furnace was erected which only ran a short time. It is now being rebuilt. The probability is it will continue in operation as long as the ores are susceptible of reduction more cheaply by smelting than by roasting and amalgamating. The mines of Bannock have produced a large amount of ore. With proper management they will continue to pay well. A captain, ignorant of his business, with a crew of landsmen, can manage a ship as well as a superintendent, unacquainted with mining, can manage a mine or mill with men unaccustomed to either. Sulphuret ores have been reached in some of the mines, which the mills will not be able to reduce without additional and proper machinery. The Dakota was the first lode discovered and has been worked most extensively, probably more than all other veins in the district. It is a large, irregular vein, distinctly traced on the surface for over a mile in length, and opened at six different points to a depth of 100 feet, and in one place to a depth of 320 feet. There is no doubt of its depth and permanency. It varies in thickness from three to eight feet; dips to the northeast; strike, northwest and southeast; the general dip and strike of the veins in this locality. It carries the oxidized ores to a great depth, containing free gold, easy of extraction. The Dakota was located under the old law, which only allowed 100 feet to a claim. Nearly every claim was held separately, which materially interfered with the proper opening and working of the mines. One tunnel has been driven in 800 feet in a thorough and workmanlike manner. Some of the shafts are well constructed, but much of the work is poorly done and on a bad system, rendered necessary in part by the small size of the claims. Each company should own at least 1,000 feet, which would justify opening in a proper manner. The country rock enclosing the lodes is limestone, of a late geological epoch, and rests unconformably upon syenites. No veins have been found in the syenites, and probably if they pass from the limestone into the syenites they will be found to be impoverished.

ARGENTA DISTRICT—A MULTIPLICITY OF VEINS.

Argenta mining district lies north from Bannock, on the north bank of the Rattlesnake creek. This district, although not large, contains a great number of veins. In no part of Montana yet explored have so many veins been found in so small a compass. On the creek a few small spots have been worked for placer gold. The quartz veins are in limestone, and generally resemble those at Bannock, only they contain more lead and iron.

SUMMIT DISTRICT.

The quartz veins in this district were the undoubted source of the gold in Alder gulch. Several of them were discovered and located soon after the location of the placer mines in the gulch below. The first mill here, like the first at Bannock, was of Montana manufacture. A wagon supplied the iron; the choice lumber and the natural products of the district, with the labor of the builders, furnished all else. It was a financial success, but as the ore was carefully selected, the yield was higher than has been obtained since. The mill was propelled by water; its capacity was three and one-half tons per week. Since then many veins have been sold in the Eastern States, and a number of stamp mills erected, a few of which have been moderately successful. They only employ battery amalgamation, and pass the pulp over copper plates, which will not save as much gold as when iron pans or arastras are used. One mill has a great collection of costly mechanical curiosities, many novel and some obsolete. After a year's experience the operators still indulge in the anticipation of gratifying results. The method employed in these mills will not extract the gold from sulphuret ore. The mines contain a large amount of oxidized ore, which will eventually be exhausted, and the sulphuret ores will alone remain. Sulphurets constitute the main reliance for the future; and the working of any mill that cannot extract the gold from them will not be permanently profitable. The mills in operation in this district crush about a ton to the stamp in 24 hours. The cost of working in two mills was $6 50 to $7 per ton, respectively, while in another it was estimated at $3 25 per ton; these were stamp mills. In another, the cost was $25 per ton. The cost of the stamp mills was from $20,000 to $30,000 each, according to their capacity, which varied from 15 to 24 tons per day. The cost of one mill was $120,000, with a capacity of about 12 tons per day. Wood varies from $5 to $6 50 per cord; wages are from $6 to $9 per day. About twenty mines have been located and opened to some extent in the Summit district. Among the most celebrated are the Kearsarge, Oro, Cash, and Lucas.

HOT SPRINGS DISTRICT—LAVISH EXPENDITURE UPON MILLS.

A large amount of money has been expended in opening mines and building mills in this district. The mills cost from $30,000 to $200,000, as estimated by men who have had good opportunies of obtaining correct information. The estimates may be too high, but it is certain the expenditures have been extravagant, compared with the capacity of the mills. There are three mills in the district, two of which are running, the other is nearly completed. The largest of these has forty stamps, twenty of which are running. Its capacity is twenty tons per day. The capacity of the others is less. The mill companies, in many instances, do not wish their results made public, as it might effect the price of their stock. In some cases, owing to the short time during which they have been running, no accurate estimates of the yield can be made. Within a year or two greater experience in working will result in something like a general average of profit at each mill. In the Cape mill ore was worked from eighteen different veins, in amounts averaging from three to fifty tons. The average yield from all the veins was $20 per ton. It is claimed that the Posey mine pays $100 per ton, and has been opened to a depth of 200 ft. The George Atkins is opened 50 feet deep; thickness of vein one to three feet; strike northeast and southwest; dip 45° to the northwest; works from $40 to $50 per ton. The country rock is granite. Bevin's gulch, Granite creek and Williams' creek empty into Alder gulch from the southwest, and have some gold and silver-bearing quartz veins. They prospect well. Being now worked, their value will soon be known. There are many gulches near Virginia, as the Norwegian, which is on the east side of the range and empties into the Madison, like Meadow creek and Flat Springs creek; the California, Brandon, Ram's Horn gulches and Mill creek; all contain veins that prospect well in gold at the surface, and many of them in silver and copper. When opened no doubt some of them will become valuable mining localities.

HELENA MINES.

The Helena mines were discovered in September, 1864, at Dry gulch. Soon after gold was found in Last Chance gulch, and as the latter gulch contained water and prospected richer, it became the centre of mining operations. After Alder gulch, this is the richest that has been worked in this Territory, and is yielding largely this season. The depth of these diggings ranges generally from ten to twenty feet. In some claims it is over forty feet from the surface to the bed-rock. Work has been almost exclusively confined to the bed of the gulch. On the western side of the Prickly Pear valley, at and below the mouth of Dry creek, and on both sides of Last Chance gulch, there are hundreds of acres of shallow placers that will pay when water is introduced. Owing to a scarcity of water, Dry gulch has not been very extensively worked. A supply has just been brought in by means of ditches from Ten-mile creek, and the prospect is now more encouraging. Last Chance gulch is formed by the junction of Grizzly and Oro Fino gulches, about half a mile above the town of Helena. Grizzly comes in from the south and Oro Fino from the north. Both have been worked extensively and profitably. The country rock near Helena is limestone and metamorphic slate; further up in the mountains granite prevails. A large number of gold-bearing quartz veins are found in it, from which it is evident the gulches below received their gold. Nelson's gulch, which heads in these granite mountains and runs in Ten-mile creek, has been nearly as rich as Oro Fino or Grizzly gulches. South from these heads are a number of gulches runing into Prickly Pear, which have paid well. The greatest obstacle that the miners encounter is the want of fall in the beds of the gulches. They are too flat; but the same method of fluming with steam machinery for removing the tailings from the flume, recommended for Alder gulch, will be equally as efficacious here. The mines around Helena are supplied with water by a number of ditches, the actual cost of none exceeding $10000. Small ditches usually are profitable; large ones seldom pay the cost of construction.

WHITLATCH UNION MINE.

The Whitlatch Union vein has been more fully opened than any other in Montana. Its strike is east-southeast and west-northwest; dip 40° to the northward; thickness of vein from a seam to fifteen feet; average four feet; opened to the depth of 250 feet, and in a number of points inclines have been sunk to depths from 100 to 200 feet. It has been traced for a long distance on the surface, and several different companies are at work on it. The ore is worked with the greatest facility. Its average yield has been about $40 to the ton. One lot of 1000 tons yielded $60,000, or $60 per ton. The gross yield, so far, has been $250,000, as near as is known by the workings of the different mills.

COMSTOCK.

At Butte City resides Henry Comstock, famous as the discoverer of the Comstock lode, of Nevada, the discovery of which inaugurated the era of siver mining in the United States. Although a man of the strictest temperance, using no stimulant stronger than tea or coffee, and not even tobacco, years and the hardships and excitement incident to a frontier life are telling painfully on his faculties. In a conversation with him he referred to his past career—especially his connection with the lode that bears his name. His intellect appears to wander although his hand still retains its cunning. He is a skillful prospector, but his fading recollections carry cloudy images to his darkened understanding. He imagines he owns the whole Comstock lode, and the cities of Gold Hill and Virginia; but as he has no immediate use for them, he allows others to live in its houses; the people are poor, and it would be hard to turn them out, especially in the winter. This feeling of benevolence in the old man is really genuine, and one that he habitually practices. He has a small claim that pays little more than wages. If a poor miner comes along without means, he gives him an opportunity to work in the claim until the suffering stranger has the means to go on his journey. Recently an emigrant came along who was sick and could work but little. Comstock and he worked together in the claim; the old man doing the most laborious part until the emigrant concluded to leave. Comstock then divided what was taken out, and seeing it was too small for a man to travel on, said; "Now, we will divide my half again, you will need it." He says that at times he thinks if the government of the United States knew how he is situated, it would not let him suffer.

ALDER GULCH.

Alder gulch rises in a spur of the Rocky mountains, and runs north. It is from fifteen to seventeen miles in length, and empties into the Stinking Water, a branch of the Jefferson fork of the Missouri river. It has many side gulches or tributaries, but none of them except Spring and Bowers gulches, which are near its head, have any gold, or at least not sufficient to pay. The hills on each side are rounded off and covered with soil, presenting the soft outline of an agricultural country. The denuding effects of time have doubtless been of long continuance. A careful examination of the gulch will convince any one that the gold in it came from near the head, at its junction with Bald mountain. The gold at that point is coarse and rough, with portions of quartz adhering to it; further down the stream it becomes finer and brighter, showing unmistakable signs of having been worn by the action of water. Near the mouth it is excessively fine, and cannot be collected in a satisfactory manner except by the use of quicksilver. The gravel is very coarse and heavy high up the gulch, containing many boulders of a large size; further down it becomes worn away to small particles, and at the mouth only sand and very fine gravel are found. The country rock at or near the head is gneiss, and the same rock holds for a considerable distance; below it is replaced by micaceous slate. Near the head the rocks rise on each side in a very precipitous manner, forcing the gulch into a narrow cut or fissure, but below, at the distance of three or four miles, it widens out. The paying portions correspond in width to the bed of the stream, and are richest where the bed is narrowest. This gulch is a vast natural quartz mill and mine. Frost and atmospheric action loosen the quartz containing the gold, and throw it down, when the attrition caused by the current of water pulverizes and washes away the gangue, leaving the gold behind. This action, though very slow extending back through countless ages, produces stupendous results.

The number of quartz veins found at the head of Alder gulch, known to contain gold in sufficient amounts to add materially to its products, is not more than twenty, of which the average width is about two feet, and the average assay value about $10 per ton, estimating all the vein stuff between the walls. Alder gulch has produced more gold than all the others, and probably more within the last three years than ever was taken in the same time from any gulch of the some extent. It is the opinion of those best qualified to judge, that within three years from the commencement of mining operations on this gulch, $30,000,000 were taken from it. This estimate may be exaggerated, but the amount taken out was certainly beyond precedent in Montana. The mines were discovered in the spring of 1863, and in eighteen months a population of 10,000 had gathered on the banks of the stream, building up four considerable cities, to wit: Nevada, Central, Virginia, and Summit City. Virginia was built first, and, occupying a central position, always maintained its supremacy. It is pleasantly located on the bank of Alder gulch, and contains a number of fine stone buildings, consisting of banks, stores, markets, dwellings, etc. It supports two newspapers, and is one of the chief mining and commercial centres in Montana. Helena is its only rival. Although the first excitement incident to the discovery of a new and rich mining district has passed away, and the mines most easily worked have already been worked over once, still the annual production is large. By proper working, as will be explained hereafter, the future production may be made equal to the past. It is the opinion of the best judges, as already stated, that $30,000,000 have been taken out of the gulch by the miners. This cannot be considered more than one-fourth of the amount that has come from the veins at the head of the gulch. Probably one-tenth would be nearer the amount, especially when we consider the extremely divisible nature of that metal and the facility with which minute particles are transported by water, a large portion of them being so small that it is impossible to collect them by any gold-saving process yet devised. Rating the amount already extracted at one-fourth, this would give $120,000,000 as the actual mineral value of the gulch. At $10 per ton this would require 12,000,000 tons of quartz to be reduced, provided all the gold in the rock is extracted. At thirteen feet to the ton a result of 156,000,000 cubic feet of quartz must be reduced to produce that amount of gold; equal to the product of twenty veins two feet thick, each a mile long and nearly 1,000 feet deep. The general appearance of the country warrants the belief that the denudation is fully equal to 2,000 feet. Bald mountain, which stands at the head of the gulch, rises to the height of between 2,000 and 3,000 feet above the quartz veins at the head of mining operations. A great length of time must have elapsed since this denuding operation commenced, and it is still in action and will continue until either man forestalls nature in extracting the gold from the veins, or some great upheaval changes the face of the country and causes the formation of a new set of watercourses. The country rock contains a large amount of mica. After a gentle shower the whole face of the earth is colored a fine bronze. The first mining district found on the gulch was Fairweather, called after one of the discoverers. Above this were Highland, Pine Grove, and Summit, and below, Nevada and Junction, their locations extending from Fairweather district in the order in which they are named. Each had a code of laws almost identical with that of Fairweather. These laws have been subject to trifling changes, and generally have been very satisfactory in their operations. In the lower districts claims only come to the centre of the gulch, thus giving double the number that were held above; the same on the banks. Not far from 1,000 claims are located in this manner, and it is remarkable that nearly every claim paid for working when wages were from $10 to $14 per day in gold. From many of the best claims $150,000, and from some as much as $200,000, have been taken out. The usual method of working was to sink a shaft fourteen or fifteen feet to the bed-rock and extract the rich gravel, which was from one to three ft. thick, by drifting. In this way a considerable amount of ground was left as pillars to support the ground above. The bed-rock cannot be worked with the care necessary to extract all the gold. When gold is very abundant the miners become careless and do not work closely. This gulch was worked to a great extent by hired men, who are not as careful as the owners of the mine. In some of the deepest claims water retarded the working or prevented it entirely. Owing to these causes it is probable only about half the gold has been taken out that can be obtained by careful and thorough working. The object of each miner was to get as much gold as possible in the shortest time and depart for his home, expending only sufficient to defray the current expenses. The water in the gulch nearly sufficed the wants of the early miners. Up to this time only two small and inexpensive ditches have been constructed. It is proposed to bring water from the Jefferson or the Stinking Water rivers. From the Jefferson a large amount could be brought in at the head of the gulch, but the cost would be great. From the Stinking Water the cost would be less, but the water could not reach the gulch by two or three miles, and the supply would be insufficient. Near the upper part of the gulch small flumes are in course of construction. They are disconnected and too short to be efficient. To work in the most economical and thorough manner requires a large flume from the mouth of the gulch up to the head, with a large amount of water. The greatest obstacle to placer mining in Montana is the want of fall or descent, and this is particularly the case in Alder gulch. To overcome this difficulty and keep the works in running order it will be necessary to have the flume double at certain points, with a reservoir in each, so that when one reservoir is filled with sand and gravel, the water can be turned into the other flume while the first reservoir is emptied. This can be done by a steam paddy or other machinery. By having places for the sand to settle and be removed at two or three points along the flume, it can be kept in running order. By such a flume system and the use of hydraulics the gulch can be thoroughly worked, and its future production made at least equal to its past. This method of mining requires capital. The miners generally are employed by an individual or company and the profits divided amongst few. The last working usually occupies about twice the length of time occupied by the first.

GOLD AND SILVER.

Colorado.

[From an Occasional Correspondent.]

REVIVAL OF MINING AND TRADE.—PROGRESS OF THE RAILROAD.—THE CROPS.—HOPEFUL FUTURE.

DENVER, C. T., June 15, 1868.

EDITOR AMERICAN JOURNAL OF MINING:

Mining is opening better in Colorado this year than before since 1863, and there is every reason to believe the new prosperity, proceeding from the general resumption of earnest individual work, and the stagnation of speculative operations in mines as a business; together with the fact—which at last seems established to the satisfaction of the public—that stamp mills and smelting will treat both the gold and silver ores as well as perhaps is practicable for the present—here is reason to believe. I say, from these facts, that the new prosperity will be permanent. Our silver mines are producing some extraordinarily rich ores, ranging from $100 to $1,000 a ton, several lodes running from $300 to $500. The veins grow stronger as wrought, too; and they are being found in Boulder, Gilpin, Clear Creek, and Park counties, a section of country fifty miles in length. Southwest of this, again, a very rich gold district is attracting quite a rush. Placers have been worked there—headwaters of the Arkansas—several years during the warm months, but it was only late last fall they began to find the lodes whence the gold came. They are very rich, equal to those of the Gregory district (Gilpin county) in 1859 and '60. Two mills will be running there by the beginning of July, and several more before winter. Of the richer silver ores some are making arrangements to transport them to Newark, N. J., for reduction. They can be so transported and treated for about $100 a ton. Five tons of ore from the Terrible lode, near Georgetown, worked up to $658 a ton, coin value. One and one-fourth ton from the same lode, reduced at Newark, yielded at the rate of $720 a ton, coin. So you see even that will pay, and largely. The prospect of the construction of the railroad from Denver to the Pacific, this season, is fair. Fifteen miles of the grade of the road are already finished. The Moreno mines, just over the southern boundary of Colorado, are beginning to produce gold dust by the pound, as the sun starts the waters. A ditch, bringing water forty miles, will be finished to them in about three months. They are beginning to find valuable lodes as the snowy covering of the ground is removed. The same is emphatically true of the Sweetwater country, on the line of the Union Pacific railroad, near the South Pass. Considering the fact that everywhere in the Rocky and Sierra Nevada mountains, for the entire length of North America, where men have alighted, so to speak, gold and silver mines of marvellous richness have been found and are being worked. The

hesitation of the East Division railroad about coming on to the mountains, after having built out into the plains 200 miles, is wonderful; altogether beyond our comprehension. No person has any adequate conception of the mineral wealth of the Rocky mountains and the pastoral wealth of the country skirting their base, and constituting their parks. No railroad, until you have a half dozen within the present territory of Uncle Sam, can strike or penetrate these mountains amiss. We have not begun to explore them yet, and in our oldest mining towns, discoveries are occasionally made that throw all former "big things" in the shade. It will be so a hundred years after we are dead; perhaps a thousand. Western North America is the virgin part of the world. It wants a system of railroads commensurate with its gigantic features, and it is strange the East Division is so loath to do its part in building it. I am willing to stake my judgment on the assertion that Colorado will be producing more bullion, annually, within ten years, than California did in her palmiest days. The crops are looking well, larger breadth in crops than ever before planted; no grasshoppers yet; weather warm and dry; farmers beginning to irrigate. Everything in our country is prospering, everybody hopeful, none of that stagnation in trade and dread of the future now afflicting New York.

O. J. HOLLISTER.

Idaho.

The news from this Territory is very satisfactory. We understand by the papers that at no time during the past year have the prospects of mining been so encouraging as at present. The Owyhee *Avalanche*, of the 6th instant, thus discourses on the subject. It says: "Not a week passes away that does not bring to light new and rich discoveries, and the mines that have already been opened and are being worked, increase in width and richness the more they are developed. There are scores of ledges here that will pay over fifty dollars per ton; quite a number will yield from one hundred to one hundred and fifty dollars per ton, and some go as high and even higher than two hundred dollars. During the last two months the bad condition of the roads has considerably retarded the manufacture of gold and silver bricks, but the bullion shipments are beginning to go up in the figures again, W. F. & Co. having sent below on last Tuesday morning nearly sixty-two thousand dollars worth of gold and silver bullion. As a consequence of the stability and richness of our mines, other classes of business are assuming a permanency hitherto unobserved. Our merchants are receiving large supplies, confident of increasing prosperity this season. Stores, hotels and other business houses are being refitted and enlarged. Large fire-proof buildings are in course of construction, and other substantial edifices will soon be built. The ring of the blacksmith's anvil is heard from early dawn till late at night, while the carpenter's hammer keeps up a continual rattling the whole day long. Attracted hither by the cheering prospect, men of means are making permanent investments, and nearly every one wears a confident, hopeful air."..... From the same paper we learn that the Golden Chariot company are now running a new level at a depth of one hundred feet below the tunnel, where the ledge is about three feet wide. It is getting softer and easier to work, so that it does not require so much blasting as usual. The ore is still rich in gold, but as the depth of working increases, there is a corresponding increase in the proportion of silver in the form of black sulphurets, which would seem to demonstrate that the gold will ultimately disappear, and silver take its place. Large quantities of new timbers are now on the ground. The Ida Elmore continues as rich as ever, the ore being of about the same character as the Golden Chariot. The mine is being well timbered, and the stopes and levels put in good shape for the extensive operations that will be carried on this season. Messrs. Way and Vincent have recently struck rich gold and silver bearing quartz on the second south extension of the Oro Fino, which was located in '63. The discovery has occasioned quite an excitement among the quartz men, and "feet" are eagerly sought for.....At Deadwood, according to the *World*, water is plenty and the miners are all at work. The claims generally pay richly—some big. The Dutch company say they are averaging $100 per day. Only one sale has taken place in the basin. The one-fourth share of 1,200 feet in Dutch gulch sold for $1,500. Pack trains with goods have got into the Basin. Many are arriving to take up claims.

Arizona.

The Wickenburg and La Paz people are greatly excited over the new mine recently discovered near Black Tanks, on the La Paz and Prescott wagon road. The ledge has been located for miles, and is being worked upon by several companies. It is said to be richer and larger than the Vulture. Henry Wickenburg and W. P. Smith were hauling rock to their mill at Wickenburg, to crush and test it. It is feared that the work will have to be suspended in Turkey Creek District on account of the Indians. The prospects of the Gross lode are favorable. Both of the Wickenburg district mills are running. R. W. Groom, one of the best, if not the best prospector in the country, has found another rich and big silver ledge fifteen miles below Wickenburg. He will sink a shaft upon it. Mining is being carried on extensively at Eureka, and other points on the Colorado river. Ledges that were given up years ago as "hard cases" are now producing a great deal of gold and silver bullion. In the vicinity of La Paz there are several rich ledges upon which work is being done. Mr. Ravena's lode is said to be very rich. The Chase mill, six miles from Prescott, is nearly completed. Messrs. Noyes and Curtiss expect to be able to complete it next week. Work upon the tunnel has commenced. The rock looks well for pay. Roddick and Feland have started a new shaft on the Chase lode, out of which they are getting some very rich silver ore. Quartz mining in Big Bug and Walker's districts are almost at a stand-still. In Turkey Creek district a shaft is being sunk on the Gross lode. The placer mines of Upper and Lower Lynx creek and Hassayampa are yielding the miners good wages. Favorable reports are also received from other localities, and there is every indication that placer mining will be very brisk this season. Considerable gold is being taken out of the placers at Weaver Hill, and those in the vicinity of Vulture mine, 15 miles from Wickenburg. The "dry-washing" machine is said to be a perfect success.

COAL.

Pennsylvania.

The Philadelphia *Morning Post* has the following relative to the strike at the coal wharves, Port Richmond, of which mention has heretofore been made in the JOURNAL OF MINING. It says: The strike at the Reading Railroad Wharves, in the Twenty-fifth Ward, continues, and at present there is no indication of an adjustment of the difficulty. About six hundred men are in the strike, comprising the entire force of "wheelers," "dumpers," and "track men." The demand of the "trimmers" for an increase was granted, and they continued at work. The strikers are not satisfied with the action of the "trimmers." They contend that the latter should cease operations until the demands of all the operatives are granted. The strike commenced on Monday, June 8. At that time the pay was eighteen cents per hour. A few months ago it was fifteen cents. Petitions were presented for an increase to twenty cents, and eighteen was obtained. Subsequently petitions were again presented for twenty cents, to which, it is alleged, the company paid no attention whatever. Then followed the demand and strike for twenty-five cents per hour. The work performed by these men is exceedingly laborious and not unattended with danger. The "wheelers" are those who convey the coal from the pier to the vessel. The barrow contains 224 pounds of coal, and has frequently to be taken up a steep gangway before reaching the vessel. The "dumpers" attend to loading the cars at the shutes, the coal passing directly from them into the hold of the vessel, where it is stowed by the "trimmers." The "track men" clear the cars of the coal that will not run out when dumped, and push empty cars clear of the work. All these men are paid only for the time actually employed. During five months of the year they cannot do anything. Occasionally a vessel arrives to be loaded, but from the 1st of October till the 1st of April they will not earn ten dollars. We saw yesterday the February pay-roll of one of the largest shippers in Richmond, and the wages for that entire month were in no case over ninety cents. It is estimated by the shippers themselves that the wages of the men now on the strike will not average, at most, twenty cents per hour, six dollars per week! How they manage to feed, clothe and shelter their families on such wages, we cannot divine. Thus far there have been no hostile demonstrations, and there appears to be a determination among the men to avoid and prevent any such occurrences. A policeman is stationed at every pier, but their services have not been required in a single instance. About eighty Germans were obtained yesterday. They are taken to and from work in a steamer. The proper prosecution of the work requires considerable experience, and the new hands progress indifferently. The piers are full of coal, the tracks are crowded with cars, and little progress seems to be made in shipping.....The Pottsville *Miner's Journal* says that the laborers and miners in the employ of the Delaware and Lackawanna Railroad Company are on a strike for higher pay. They claim that in the spring of 1863 they were paid by the mine one-third of the price paid by the company for cutting coal, that since that time the miners have cut down the prices to the laborers.....According to an Ashland paper, for some time past the men employed at Joseph M. Freck's coal works, Centralia, have been on a strike, and we learn that numerous threats have been made against Mr. F.'s life and property.

COPPER.

Michigan.

The news from the Portage Lake district to the 18th inst., is as follows, condensed from the *Gazette*:—The Garden City mine has passed into the hands of a Mr. Caton, of Illinois. Hereafter it is to be styled the Catot mine. A force will be put on in the fall. .....The heaviest masses from the Central mine, shipped from Eagle Harbor this spring, weighed as follows: 19,556 lbs., 18,177 lbs., and 17,920 lbs. Prospects at the mine are good for a large shipment this season.....The Calumet product for the month of June, up to Sunday, 13th inst., was 61½ tons. The reservoir dam was maliciously cut on Sunday morning, between one and three o'clock, and all the water ran out. A large party of men were immediately set to work repairing the dam, which was completed the same day. On Monday an injunction against rebuilding the dam was issued. Injunction was dissolved on Wednesday. A large kiln house, and elevated tram roads, to the various shafts on the mine, are in course of construction. The mill is running two heads.....The Hecla mill, from June 1, up to Saturday the 13th inst., produced about sixty tons of stamp mineral. Foundations for two additional heads of stamps are being laid. An additional rock crushing house at the mine, is well under way, the necessary machinery having arrived, and is ready to be placed in position at once.....The product of the South Pewabic mine, for the month of May, was 84 tons, 1,083 lbs. During a third of the month but two heads were in operation.....At the Copper Falls Mine connection with Spencer shaft, at 70 fathom level, was made during the past week, and it is expected that all the Ash-bed mined hereafter, will pass through this shaft. The new engine house is being pushed forward with some energy, and by the first fall of snow will be thoroughly equipped, both in skip and pump. The north schute of copper on 80 fathom level, on line of the Ash-bed, still holds its own. The south course is producing excellent stamp and barrel work. The product for the month of May was somewhere in the neighborhood of 70 tons. The miners have been somewhat scared by the introduction of some nitro-glycerine..... The Ontonagon *Miner* of the 13th instant says that at the Nonesuch mine it is designed to commence stamping during the coming week. At the Ogima mine but eight men are at work on the old vein. At the National, masses of fifteen and twenty tons weight are beginning to be a common thing, and not a rarity. The mine will give a product for May of forty tons, with forty miners. The stamp mill is now working finely, giving a regular monthly product of twelve tons of copper. The new sand scraper, in the form of a wheel, takes the place of a number of boys, and does more effective work. During the month of May Evergreen Bluff produced twenty-seven tons, 1,330 lbs. of barrel, stamp and mass copper. Knowlton produced 15 tons, 404 lbs.; and Ogima, 12 tons, 1,920 lbs.

MARKET REVIEW.

FRIDAY EVENING, June 26, 1868.

Gold and Silver Stocks.—The doings in all the stock board are mostly confined to Colorado stocks, some of which are now quoted at still higher rates. Nevada stocks continue at about last week's figures, with some little improvement in one or two of the leading kinds. The mining stock market generally is moderately active. Prices are quoted to-day as follows:

	Bid.	Asked.		Bid.	Asked.
Alameda Silver	35	— 90	Kipp & Buell Gold	— 5	— 15
American Flag	— 40	— 55	Keystone Silver	— 1	— 2
Atlantic and Pacific	— —	— 80	La Crosse Gold	— 40	45
Bates & Baxter Gold	— 30	— 75	Liberty Gold	— 3	— 5
Benton Gold	— 35	— 45	Liebig	— —	— 4
Black Hawk G	— —	7 00	Manhattan Silver	— —	150 00
Bobtail Gold	— —	1 50	Midas Silver	— 25	— 70
Bullion Consolidated	— 55	— —	Montana Gold	— 48	— 55
Burroughs G	— 8	— 11	New York	— 60	75
Columbian G. & S.	— 4	— 10	New York & Eld'o	— —	1 75
Combination Silver	— —	30 00	Nye Gold	— 2	— 3
Consolidated Gregory	5 35	5 45	Oxyoke Mining	20 00	30 00
Corydon Gold	— 34	— 40	Con. Colorado	10	— —
Edgehill Mining	4 15	4 20	People's G. & S. of Cal	— 5	— 15
Empire G	— —	2 50	Quartz Hill	1 10	1 15
Gold Hill	— —	1 00	Reynolds Gold	— —	— 4
Grass Valley	— 25	— 30	Rocky Mountain Gold	— 11	— 19
Gunnell Gold	— 50	1 00	Smith & Parmelee Gold	3 50	3 55
Gunnell Union	— —	— 40	Sensenderier	— —	10 00
Hale G. & S. bs	— —	— 88	Symonds Fork Gold	— —	1 00
Harmon G. & S. bs	— —	3 00	Texas Gold	— —	— 10
Holman	— 4	— 10	Twin Riv Sil	— —	4 00
Hope Gold	— —	— 20	Vanderburg G	— —	— 70

Copper Stocks.—Davidson now sells at 75c. Prices are quoted:

Caledonia C	— —	5 00	Hilton	— 50	1 00
Canada	— —	— 50	Knowlton	— —	1 00
Charter Oak	— —	1 00	Minnesota	— —	4 00
Central	22 00	— —	Evergreen B	— —	10 00
Davidson	— 75	— 75	Gardiner Hill	— —	1 00

Petroleum Stocks.—Sales of Bennehoff Run are reported at 95, and of United States at $2 35. Quotations range:

	Bid.	Ask'd.		Bid.	Askd'.
Bennehoff Run	....	1 10	National	1 00	3 00
Brevoort	....	50	N. Y. and Alleghany	....	2 20
Buchanan Farm	45	48	Pit Hole Creek	60	90
Central	25	50	Rynd Farm	12	15
Clinton Oil	1 10	....	United Pet. Farms	5	12
Empire & Pithole	....	10	Union ex div	4 00	....
Manhattan	....	5	United States	2 30	2 40

Miscellaneous Stocks.—Walkill Lead, 19@20c.; Tudor Lead, $2@2 15; Rutland Marble, $16 50 asked; Canton, 49½@50; Cumberland, 30@34; Quicksilver, 24½@24¾; Wells, Fargo & Co., 25½; American, 47@44¾; Adams, 53½@53¾; United States, 48@48½; Merchants' Union, 35½@25¾; Pacific Mail, 101⅝@102¾; Western Union Telegraph, 33½@34⅛; New York Central, 134¾@134½; Erie, 64¾@68¾; Hudson River, 141@141; Reading, 104¾@104¾; St. Paul, 65½; St. Paul pref., 73¾@73; Fort Wayne, 112⅝@112¾; Ohio, 30½@30¾.

Government Stocks.—The demand for U. S. Securities is moderately active at the following rates:

U. S. 6s, 1881, coupon	117¾@117¾
U. S. 5-20s, 1862, coupon	113½@113¼
U. S. 5-20s, 1864, coupon	110⅞@111
U. S. 5-20s, 1865, coupon	111½@111¾
U. S. 5-20s, July, 1865, coupon	113¾@113¾
U. S. 5-20s, July, 1867, coupon	113¾@113¾
U. S. 5-20s, July, 1868, coupon	109¾@109¾
U. S. 10-40s, coupon	107 @107¾
U. S. 7-30s, July, large	109¾@ —

Foreign Exchange remain steady. Leading bankers ask 110¼ for 60 days' sterling bills, and 110¾ for short sight do. We quote: Bills at 60 days on London, 109½@109⅝ for commercial; 110@110¼ for bankers; do at short sight, 110⅜@110⅝; Paris at 60 days, 5.16¼@5.12½; do. at short sight, 5.11¼@5.10; Antwerp, 5.16¼@5.12½; Swiss, 5.16¼@5.12½; Hamburg, 36@35¾; Amsterdam, 40⅞@40½; Frankfort, 40¾@41⅛; Bremen, 79¾@79¾; Prussian Thalers, 71¾@72.

Gold is dull at 140¼@140¾.

American silver is in moderate request at 6½@7¼ cents below the price of gold. Mexican dollars are nominal at 103¼@103¾ in gold.

The money market continues very abundant on call, and rates remain at 3@4 per cent.

Copper is very quiet. The sales for the week foot up 500,000 lbs. at 23@23¼c. for Straits; 22¾@23c. for Lake Superior, and 22¼@22½c. for Baltimore.

The London market is dull at £75 10s. for Chili.

Tin is dull and nominal at 31c. for Straits. Banca is held at 27½c.; English, 24c.

The London market declined to 91 per cent. for Straits.

Spelter—6¾@6 45-100s. for Silesian, with a retail business.

Lead—150 tons ordinary Spanish sold at 6¼c. per lb. gold.

Petroleum is firm at 16¼c. for crude, and 32c. for refined in bond.

THE IRON TRADE.

NEW YORK, Friday evening, June 26, 1868.

Scotch iron is somewhat firmer. Sales of from 100 to 200 tons of Gleugarnock, ex ship, have been made at $38, now held at $38 50@39 00; 100 tons Coltness at $42 and Eglinton and Gartsherrie from yard at $40@41 50.

Old rails are scarce with some inquiry. The sales have been 1,500 tons old American T rails on p. t., delivery out of the city; 100 tons double heads to arrive at $50; 150 tons double heads to arrive, $47 50; 75 tons T rails at dock $48. Rails may be quoted at $48@50.

New rails; 1,000 tons English—Crawshay & Co.—have been sold at $52, gold. Rails are firm and most mills on the other side are full of orders.

We notice 50 tons old horse shoes at $50; 50 do. light and No. 2, $35 currency; and 200 packs Russia sheet, assorted Nos., 13c. gold; and 276 tons No. 1 wrought scrap, on terms not transpired. Bar from store continues dull.

American pig iron is quiet, with but little inquiry; 1,500 tons Allentown No. 1 extra have been sold at $38 now held at $39.

In the Staffordshire district, England, the strike of the puddlers continues, and business is greatly inconvenienced on account of the uncertainty as to time of delivery.

STORE PRICES.

Anthracite, No. 1, best	$38 00	@40 00	Bar, Swedes, ord'y sizes	— —	150 00
" " 2x, fdry	36 00	38 00	Bar, Eng. and Am., r'd	95 00	100 00
" Grey Forge	33 00	34 00	Bar, Eng. & Am., com.	85 00	90 00
Scotch Pig, No. 1	38 00	42 00	Scroll	125 00	170 00
Charcoal, cash	45 00	65 00	Ovals and half round	120 00	@150 00
Old Wrought sc'p, fm yd.	47 50	— —	Band	125 00	— —
" " " fm. vsl.	45 00	— —	Horse Shoe	125 00	— —
English rails, gold	51 00	51 50	Rods, ⅝@3-16 inch	100 00	160 00
American " at works	70 00	— —	Hoop	133 00	185 00
American Bar Iron.			Nail Rod, per lb	9	10
Common, per ton	80 00	85 00	Sheet, Rus., Mod. Nos.	18½	19½
Refined, " "	85 00	90 00	Sheet, s'gle, D. & T. com	5	7
Old Railroad Iron	47 00	@ —	Rails, Eng., gold, ton	51 00	51 50
			Rails, American	79 00	80 00

STEEL.

English, cast (2d and 1st quality) per lb	18 @23½
English Spring (2d and 1st quality)	10 @12
English Blister (2d and 1st quality)	11½ 20
English Machinery	13½ 16
English German (2d and 1st quality)	14 16
American Blister, "Black Diamond,"	11½ 17
American, Cast, Tool " "	21 22
American, Spring " "	10 13
American, Machinery " "	— 14
American German " "	10 13

Lehigh Valley Iron Trade.

The following table shows the amount of Pig Iron transported over the Lehigh Valley Railroad for the week ending June 20, 1868, and for the season to that date.

From	Tons.	Total
Carbon Iron Co	50	4,755
Lehigh Valley Iron Co	250	5,740
Thomas Iron Co	710	14,295
Lehigh Crane Iron Co	320	12,875
Allentown Iron Co	580	8,810
Robert Iron Co	195	4,890
Glendon Iron Co	715	12,140
Other shippers	500	9,102
Total	3,320	72,607

Lake Superior Iron Trade.

Receipts of Ore and Pig Iron at Marquette, up to and including Saturday, June 13, 1868, by the Marquette & Ontonagon Railroad.

IRON ORE.

	Previously reported.	For week end'g June 13.	Total.
Lake Superior Iron Co	15,086	3,830	18,915
Cleveland Iron Co	6,219	2,044	8,263
Marquette Iron Co	2,404	350	2,754
Washington Iron Co	6,547	919	7,466
New England Iron Co	2,305	76	2,381
Edwards Mine	2,693	479	3,172
Pittsburg & Lake A. Iron Co	5,255	380	5,635
Ore to Local Furnaces	6,398	340	6,738
Total Iron Ore, tons	46,906	8,418	55,324

PIG IRON.

Morgan Iron Co	2,381	517	2,898
Greenwood Iron Co	328	....	328
Bancroft Iron Co	1,542	49	1,591
Collins Iron Co	1,028	....	1,028
Michigan Iron Co	2,023	221	2,244
Total Pig Iron, tons	7,302	787	8,089
Total Ore and Pig Iron, tons	54,208	9,205	63,413

THE COAL TRADE.

NEW YORK, June 26, 1868.

There is very little change to note in the market this week, trade is exceedingly dull. The principal event of the week was the Scranton sale which took place on Wednesday last. The attendance was fair, and last month's prices were fully realized. There was an advance on the family sizes. Below will be found a report of the sale compared with that of last month:

AUCTION SALE OF COAL.

For the Delaware, Lackawanna and Western Railroad Company, at 26 Exchange Place.

	June 24, 1868	May 27, 1868.
8,000 tons lump	$3 67½@3 72½	$3 75 @3 80
9,000 tons steamboat	3 77½@3 82½	3 82½@3 80
7,000 tons grate	4 02½@4 17½	3 95 @4 05
4,000 tons egg	4 15 @4 40	4 10 @4 27½
7,000 tons stove	4 62½@4 72½	4 60 @4 70
5,000 to s chestnut	3 90 @4 05½	3 90 @4 05

Freights are from 10 to 15 cents higher, and vessels to eastern ports are very scarce.

The amount of coal exported from the port of New York for the week ending June 23 was:

Exports for the week	tons.	5,095
Do from January 1st	do.	28,676
Do. same time last year	do.	39,549

THE DESPARD COAL COMPANY.

We desire to call the attention of Gas Companies to the advertisement of the "Despard Coal Company" which will be found under its proper heading. The natural pride which we take in the progress of all American productions, and in seeing them take the place of foreign ones, prompts us to call attention to the following qualities of this remarkable coal:

The Despard Coal has been a competitor in the markets only during the pa

two years. It has already displaced many of the Provincial coals, and has been largely sold.

The mines of this company are situated on the Parkersburgh Branch of the Baltimore and Ohio Railroad in Harrison county, West Virginia, adjacent to the coal fields of the Westmoreland, Pennsylvania and Youghiogheny, of Peansylvania, and the Cannel coal fields of the Kanawha valley.

The coal is taken from what is termed the "Big Vein," above water level. The Manhattan Gas Light Company of this city, have used several cargoes of this and denote it as "uniform in quality and prepared with great care, a first class coal, producing a gas equal in illuminating power to any coking coal. Its maximum yield is 10,767 cubic feet of gas per ton of 2,240 pounds. When confined to a production of 9,500 cubic feet per ton, which is the quantity produced for comparative test. The gas has an illuminating power equal 20-41, standard candles. It yields thirty-six bushels of coke weighing 1,541 pounds, which is of good quality and makes a clear, strong fire." This certainly is a first class record.

This coal is not only valuable for gas purposes, but has been adopted by many of our railroads, glass works, and fire-brick manufacturers, besides being extensively used for house purposes in open grates. The following is the analysis of the Despard coal which we give, in order to justify these remarks, and which speaks for itself:

Volatile matter	40.0
Fixed carbon	53.3
Ash	6.7
	100.00

The shipping facilities for this coal from Locust Point, Baltimore, are excellent, and ready despatch can be given to any draft of vessels. We trust that gas companies will become convinced of the value of the Despard coal, and at least give it a trial.

Messrs. Parmele Brothers, whose office is at No. 32 Pine street, New York City, are the Agents, and will be pleased to furnish any other information desired. They will also exhibit some specimens of the coal.

DEATH OF BENJAMIN F. ELY.

At a meeting of the Coal Trade of the city of New York, which was largely attended, held at Trinity Building on Wednesday, the 11th day of June, 1868, the resolutions adopted by the Lehigh Coal Exchange were read and adopted as follows, to wit:

Whereas, It hath pleased Almighty God to remove from our midst, in the very prime of life, our late business associate, Benjamin F. Ely, who, throughout his entire business career, has been so closely identified with the Lehigh Coal Trade in its several departments, therefore

Resolved, By the New York Lehigh Coal Exchange, that, recognizing the fidelity and integrity of our deceased friend in his business and social intercourse with us, we shall cherish in our memories the pleasant associations with which his name is connected.

Resolved, That we tender to his afflicted family our heartfelt sympathy in their great bereavement.

Resolved, That these resolutions be entered in the minutes of the Association, and a copy duly certified by the proper officers, be forwarded to the family of our deceased friend. G. B. LINDERMAN, President.
JAS. H. LYLES, Secretary.

It was further unanimously

Resolved, That we add to the foregoing resolutions the expression of our heartfelt sympathy with the family of the deceased, and of our own loss in the departure of our honorable and highly esteemed associate, and that the proceedings of this meeting be signed by the officers, and transmitted to the family of the deceased. WM. ROSS, Chairman,
F. MINOT WELD, Secretary.

The following table exhibits the quantity of Coal passed over the following routes of transportation for the week ending June 20, 1868:

	1867.		1868.		INC. OR DEC	
	WEEK.	YEAR.	WEEK.	YEAR.	WEEK.	YEAR.
Phil. & Reading R. R.	78,534	1,475,705	69,326	1,492,542	↓ 9,208	↑ 16,837
Schuylkill Canal	37,143	364,159	30,347	361,437	d 6,796	d 2,722
Lehigh Valley R. R.	46,059	909,887	51 182	1,171,029	↑ 5,124	↑261,142
Lehigh Canal	33,594	259,641	22,621	288,895	d 10 971	↑ 29,254
Scranton North	11,081	181,344	13,119	213,794	↑ 2,038	↑ 32,450
" South	25.773	592,639	20,977	507,151	d 2,795	d 85,488
Penn'a Coal Co., Rail	20,556	337,220	23,131	382,711	↑ 2,580	↑ 45,491
Penn'a Coal Canal	1,302	7,047	829	8,846	d 473	↑ 1,799
Del. & Hudson Canal	41,168	455,775	49,392	489,903	↑ 8,224	↑ 34,128
Shamokin	7.849	211.954	13,635	209,188	d 5,786	d 2,766
Treverton	1,832	20,618	215	1,167	d 9,961	d 10 637
Short Mountain	2,725	27,912	3,204	43,399	↑ 479	↑ 15,485
Lykens Valley C. Co.	1,820	26,520	1,939	37,220	↑ 119	↑ 10,690
Broad Top	.....	133,365	.....	101,351	.....	.....
W'mstown Coal'y, E.	3.225	45 054	3,699	79,048	↑ 477	↑ 33,393
Wyoming South	1,064	29,096	13,485	68,028	↑ 12,421	↑ 38,933
Wyoming North	.....	.....	1,109	1,109	.....	.....
Lehigh & Susq. R.R.	.....	.....	9,745	171,455	.....	.....
Total	311,772	5,178,346	327,955	5,629,173	.....	.....
	.....	.....	311,772	5,178,346	.....	.....
Increase	.....	.....	16,183	451,427	.....	.....

Schuylkill Coal Trade.

BY RAILROAD AND CANAL, FOR WEEK ENDING JUNE 26, 1868.

	RAILROAD	CANAL.
St. Clair	28.679	.....
Port Carbon	7,060	13,339
Pottsville	382	1,387
Schuylkill Haven	21,349	22,574
Auburn	3,134	.....
Port Clinton	2,539	1,214
Company's use	2,148	.....
Total for week	65.311	38,514
Previously this year	1,492,542	361,437
Total for season	1,557,853	399,951
Same time last year	1,557,298	397,270
Increase	555	2,681

Report of Coal Transported over Lehigh Valley Railroad

Week ending June 20, 1868, compared with same time last year.

	Week. Tons. Cwt.	Total. Tons. Cwt.
Total Mahanoy	10,702 01	248,481 00
Total Hazleton	23,413 06	550,490 11
Total Upper Lehigh	493 16	29,466 18
Total Beaver Meadow	11,634 06	211,428 00
Total Wyoming	4,938 10	131,162 05
Grand Total	51,182 01	1,171,028 14
Same time last year	46,058 13	909,887 00
Increase	5,123 08	201,121 14
Forwarded east from Mauch Chunk by rail	51,182 01	1,171,028 14
Delivered at Mauch Chunk and on line of road above that point	194 03	15,366 02
At Penn Haven for Shipment by Canal	3,837 16	23,201 07
At Mauch Chunk for shipment by Canal	3,132 05	22,020 05
Total by Rail and Canal	58,346 05	1,231,616 08
Same time last year	49,264 00	942,357 06
Increase	9,082 05	289,259 02

Report of Coal Shipped by Lehigh Canal,

Week ending June 20, 1868, compared with same time last year:

WHERE FROM.	Week. Tons. Cwt.	Total. Tons. Cwt.
Mauch Chunk Region	11,632 10	122,921 19
Beaver Meadow Region	2,559 15	20,090 06
Mahanoy Region	96 05	943 01
Hazleton Region	3.837 16	90,274 12
Upper Lehigh Region	651 00	5,619 03
Wyoming Region	3,844 06	49,046 10
Total	22,621 12	288,895 11
Corresponding week last year	33,593 09	259,640 14
Increase	10,971 17	29,254 1

Lehigh and Susquehanna Railroad, Week ending June 20.

WHERE FROM.	WEEK. Tons. Cwt.	TOTAL. Tons. Cwt.
Total Hazleton Region	3,890 01	121,987 07
" Upper Lehigh	2,474 13	53,074 18
" Wyoming	11,258 15	138,555 00
Grand Total	17,623 09	313,617 05
Corresponding week last year	8,958 15	233,464 17
Increase	8,664 14	180,152 08
Decrease	.....	.....
Forwarded South from Mauch Chunk by rail	9,215 09	143,275 03
Delivered on line L. & S. R.R. above Mauch Chunk	529 06	28,179 15
Delivered at Coal Port for shipment by Canal	7,878 14	142,162 07
Total	17,623 09	313,617 05

Cumberland Coal Trade.

By B. & O. RAILROAD.—The shipments over the Baltimore and Ohio Railroad, for the week ending June 20, were as follows:

From Cumberland & Pa. R. R., via Cumberland:	
Consolidation Company	5,319 17
Borden do.	859 08
Allegany do.	....
Midland	809 14
Midlothian	172 15
From George's Creek via Piedmont.	
George's Creek C. & I. Company	2,050 05
Central "	3,330 11
Atlantic "	706 08
Swanton "	884 10
Potomac "	1,074 02
Piedmont	1,183 09
Franklin	647 05
Hampshire	1,426 02
Total	18,463 26
From Eckhart Railroad.	
C. C. & I Co.	3,414 08
Total	21,876 14

By C. & O. CANAL.—There were despatched from this port, during last week, 15,518 06 tons of Coal, forwarded by the following companies:

American	4,282 11
Borden	1,750 10
Central	4,870 06
C. C. & I.	732 00
Consolidation	1,134 11
H. & B.	1,854 07
Midlothian	894 01
Total	15,518 06

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, June 27, 1868.

Schuylkill R. A., choice	$5 50@$....	Schuylkill Chestnut	4 00 ....
" Ordinary	5 25	Lehigh W.A. Lump Old Co	5 00 ....
" W. A., Lump	5 00	Lehigh Broken	4 87½ ....
" Steamboat	5 00	" Egg	4 87½ ....
" Broken	5 00	" Stove	5 12½ ....
" Egg	5 25	" Chestnut	4 37½ ....
" Stove	5 25	Shamokin	5 50 ....

SPECIAL COALS.—DEALERS' QUOTATIONS.

Diam'd Vein R. A., Sch'kill	5 50	Old Co.'s W. A., Lehigh	5 50 ....
Locust Dale W. A., "	5 50	Mt Pleasant	5 00 ....
Honey Brook " Lehigh	5 50	Broad Mountain	....
Harleigh " "	5 50	Buck Ridge W. A., Sh'kin	5 50 ....
Spring M'n " "	5 50	H. Heils, E. S'klin, Lorb	5 50 ....
Sugar Creek " "	5 50	New England Red Ash	5 25 ....
Ashburton " "	5 50	Wyoming	5 50 ....

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, June 27, 1868.

Lehigh Lump and S'mb't	5 00@....	Henry Clay, Egg & Stove	....@4 40
" Broken and Egg	5 00	Locust Mount Lump and	
" Stove	5 50	Steamboat	3 25 3 40
" Chestnut	4 25 ..	" Broken	3 35 3 60
Schuylkill R. A.	4 25 4 50	" Egg	3 60 4 00
" Chestnut	2 60	" Stove	4 00 4 15
" W. A. Lump	3 25	Lorberry Coal	4 50 ....
" Broken	3 25 3 50	Shamokin	....
" Egg and Stove	3 40 4 10	Franklin, (Lykens Valley)	5 00 ....
Schuylkill Chestnut	2 75@....	Broad Top	4 60 ....
Hill & Harris, Egg & Stove	.... 4 30		

Scranton Coal at Elizabethport, June 27, 1868.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump	$4 00@....	Egg	4 50 ....
Steamer	4 25	Stove	5 00 ....
Grate	4 50	Chestnut	4 25 ....

Prices for Pittston Coal at Newburgh, June 27, 1868.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs.	$4 20@....	Egg " " "	4 30 ....
Steamer, " " "	4 20	Stove " " "	4 65 ....
Grate " " "	4 30	Chestnut " " "	4 15 ....

70 cents additional to New York.

Lackawanna at Rondout, June 27, 1868.

Lump	$4 30@....	Egg	$4 40@....
Steamer	4 35@....	Stove	4 75 ....
Grate	4 30@....	Chestnut	4 20 ....

65 cents additional to New York.

Lehigh Coal at Elizabethport, June 27, 1868.

Lump	5 00@....	Chestnut	4 25 ....
Steamboat and Broken	4 75	Stove	5 00 ....
Egg	4 75		

Wilkesbarre Coal at Hoboken, June 27, 1868.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	$4 50@....	Egg	4 50@....
Steamer	4 50	Stove	4 95 ....
Broken	4 50	Chestnut	4 15 ....

At Baltimore, June 27, 1868.

Wilkesbarre & Pittston W. A. by car	$5 25@5 50	From wharf or yard, 50c, to 75c per ton additional	
Lykens Valley R. A. by car	....@ 5 55	Ret il, del'd, per 2,240 lbs	7 00@7 50
Sunbury & Shamokin R. or W. A. by car	5 00 5 50	George's C'k and Cumberland f. o. b. at Locust P't for shipping	....@4 75

At Havre de Grace, Md.

Wilkesbarre or Pittston, W. A., on board	$....@4 85	Sunbury or Shamokin, R. or W. A., on board	....@4 85
Trevorton R. A., on board	.... 5 25	Lykens V'y, R. A. on b'd	....@5 50

Havre de Grace is the terminus of Susquehanna and Tide Water Canal.

At Georgetown, D. C. and Alexandria, Va.

George's Creek and Cumberland f. o. b. $....@ 4 35

Prices of Gas Coals.

June 27, 1868.

PROVINCIAL. Duty, $1.25	Coarse. Gold.	Slack. Gold.
Block House	$1 75	$ 75
Gowrie	1 75	75
Lingan	1 75	75
Sydney	2 13¾	71¼
Pictou	2 13¾	1 18¾
Little Glace Bay	1 75	1 00
International Co.'s	1 75	....

AMERICAN	Coarse. Currency.	Slack. Currency.
Westmoreland Co.	$8 50	$8 00
Despard Coal Co.	8 25	8 00
Penn	8 50	8 00
Newburgh Orrel Gas	8 50	8 00

Delivered in New York.

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$ 9 50	Liverpool House Cannel	18 00@19 00
" " Cannel	14 00	" " Orrel	16 00@18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD

Liverpool House Orrel, scr'd	$18@20	Livp'l House Can'l, scr'd	22 00@— —

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

Rates of Freight from Newburgh

RIVER.

On "Pittston" Coal, by boats and barges of the Pennsylvania Coal Company, per ton of 2,240 lbs.

Troy and West Troy	$ 55
Albany and Greenbush	50
Coeymans	45
Coxsackie and Stuyvesant	40
Hudson & Catskill	35
Saugerties and Barrytown	35
Rhinebeck and Rondout	30
Po'keepsie and New Paltz Land.	25
Fishkill Landing	20
Cold Spring and West Point	20
Peekskill	40
Haverstraw	45
Sing Sing and Nyack	50
Tarrytown and Piermont	50
Yonkers	55

The Coal must be discharged with all reasonable dispatch, at the expense of the consignee, who shall also pay wharfage on the boat. Boatmen will tend guy while unloading.

EASTERN.

Stamford	$1 25
Norwalk	1 25
Bridgeport	1 25
New Haven	1 25
New London	1 40
Norwich	1 50
Mystic	1 45
Stonington	1 45
Sag Harbor	1 45
Bristol	1 55
Newport	1 55
Fall River	1 55
Providence	1 60
Dighton	1 60
Warren	1 60
Pawtucket	1 75
New Bedford	1 90
Boston	2 10
East Cambridge	2 20
Salem	2 10
Newburyport	2 20
Portsmouth	2 15
Portland	2 00

Freights on Coal Sea-borne from Port Richmond, Philadelphia.

June 17, 1868.—From Philadelphia & Reading Railroad Wharves, Phila., to

Boston	2 50	2 65	
Portland	— —	2 65	
Salem	2 60	2 65	
Providence	2 00	2 10	
Cambridgeport	2 65	2 85	
Cambridge	— —	2 65	
New Bedford	— —	2 20	
Saco	— —	3 10	
Dorchester	— —	2 65	
Fall River	— —	2 10	
Gloucester	— —	2 70	
Newport	— —	2 10	
Pawtucket and towing	— —	2 25	
Stamford	— —	1 75	
Brooklyn	— —	1 30	
New York	1 25	1 30	
Jersey City	— —	1 25	
Bath	2 65	3 00	
Portsmouth	— —	2 75	
Beverly	— —	2 65	
East Cambridge	— —	2 80	
Newberryport	— —	2 90	
Neponset	— —	2 10	
Roxbury	— —	2 85	
Wareham	— —	2 65	
Nahant	— —	2 75	
Norwich and towing	— —	2 00	
Sag Harbor	— —	2 10	
Montreal	— —	4 00	

From Elizabethport and Port Johnston.

Albany	$ 85@—	—	New London $1 15 — —
Boston	2 00	— —	Newport 1 40 — —
Bridgeport	1 00	— —	New York 60 — —
Fall River	1 45	— —	Norwalk 1 00 — —
Hartford	1 50	— —	Norwich 1 35 — —
Hudson	1 00	— —	Pawtucket and towing 1 60 — —
Lynn	— —	— —	Portland 1 90 — —
Middletown	1 25	— —	Portsmouth 2 10 — —
New Bedford	1 50	— —	Providence 1 10 — —
Newburyport	2 15	— —	Salem 1 75 — —
New Haven	1 00	— —	Augusta 2 25 — —

Rates of Transportation to Tide Water.

[BY RAILROAD.]

To Port Richmond.—(Philadelphia.)

Philadelphia and Reading R. R. from Schuylkill Haven $2 00

The following are the drawbacks allowed on all coal shipped East of New Brunswick and South of Cape Henry, until further notice:

	Drawback.	Freight.	Nett.
Lump	$1 25	$2 00	$ 75
Steamboat	1 15	2 00	85
Broken	1 00	2 00	1 00
Egg	65	2 00	1 35
Stove	50	2 00	1 50
Chestnut	75	2 00	1 25

From Port Carbon, 8 cents per ton more.

To Elizabethport.

L. V. Railroad from Mauch Chunk to Easton	$ 69
C. R. R., N. J., Easton to Elizabethport	1 06
	1 75
Shipping Expenses at Elizabethport	25
Total	2 00

To Port Johnson.

L. V. R R.	$ 69
C. R. R. of N. J.	1 12
Shipping Expenses	25
Total	2 06

To Hoboken.

L. V. R.R.	69
Morris & Essex R.R.	1 12
Shipping Expenses	25
Total	2 06

[BY CANAL.]

To Port Richmond.

From Schuylkill Haven to Port Richmond	$1 00
Freights and tolls by Raritan Canal	1 90
	2 90
Drawback	30
Total	2 60

To New York.

From Mauch Chunk to New Brunswick, by Lehigh, Del. Div. and Del. & Raritan Canal	$ 90
Freights through	1 25
Towage	20

To New York via Morris Canal.

Lehigh Canal	$ 34
Morris "	40
Towage	10
Freight	1 55
Total	2 39

Expenses from Mauch Chunk to Jersey City for Re-shipment.

Lehigh tolls (net)	$ 34
Morris "	34
Freight	1 50
Re shipping	30
Total	2 48

Provincial Freights.

TO NEW YORK.		TO BOSTON.	
Sydney	....	Sydney	$2 75
Lingan	....	Lingan	2 75
Cow Bay	....	Cow Bay	....
Port Calidonia	$3 00	Port Calidonia	2 50
Little Glace Bay	3 00	Little Glace Bay	2 5

Foreign Freights.

New Castle and Ports on Tyne	£13@15 keel.
Liverpool	12s. 6d.@16s. ton.

New York Imports of Metals, &c.

The following will show the imports of Metals, &c., at the port of New York from foreign ports, for the week ending June 19, 1868. The quantity is given in packages, unless otherwise specified.

Metals, &c.	Quantity.	Value.		Quantity.	Value.
Anvils	112	1,065	Metal Goods	95	13,3.0
Brass Goods	11	2,373	Needles	17	13,097
Chains and An	44	2,309	Nickel	12	7,466
Copper	..	370	Old Metal	....	3,693
Cutlery	49	17,406	Platina	2	785
Guns	16	1,872	Plated ware	3	861
Hardware	61	11,947	Percussion Caps	3	915
Iron, hoop, tons	182	4,799	Saddlery	7	1,969
Iron, Pig, tons	2.080	29,503	Steel	6.700	117,251
Iron, Railroad bars	32,092	174.998	Spelter, lbs	110,136	4,913
Iron, Sheet	29	2,625	Silver ware	3	1,218
Iron tubes	1,910	6,823	Tin, boxes	25,712	93,187
Iron, other, tons	967	22.783	Tin slabs, 2,335	175,837	30,789
Lead, Pigs	5,994	33,764	Wire	4	994
			Zinc	31,360	1,636

SAN FRANCISCO STOCK MARKET.

A Telegram from San Francisco, dated June 24, to Messrs. LEES & WALLER, Bankers, 33 Pine street, this city, quotes stocks as follows:

Stocks.	Bid per ℔t.		Stocks.	Bid per ℔t.	
Gould & Carry	105	@ —	Belcher	No sales.	
Savage (per share)	155	@ —	Uncle Sam	122	@ ..
Chollar Potosi	230	@ 255	California	..	@ ..
Ophir	12	@ —	Imperial (per share)	..	@ ..
Hale & Norcross	65	@ —	Alpha	..	@ ..
Crown Point	96	@ 103	Kentuck (per share)	377	@ ..
Yellow Jacket	1,000	@1,160	Cal. Steam Nav'n Co.	No sales	

Earthquake in a Deep Mine.

Virginia City, Nevada papers have accounts of an earthquake that occurred there last month. The first heavy shock was felt very sensibly at the bottom of the Bullion shaft, which is the deepest in the country, being 1,200 feet below the surface. The men felt very much like coming up, and the foreman had to go down to reassure them. While he was in the drift at the bottom the second shock took place. He says it sounded as though everything in the mine was being pushed violently from the east to the west—no damage was done, however, in this or any other mine, on the Comstock Lode.

AMERICAN
Journal of Mining.

WESTERN & COMPANY, PROPRIETORS.

ROSSITER W. RAYMOND, EDITOR.

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☞ Mr. T. P. PEMBERTON is Editor of the Mechanical Department and Agent for the JOURNAL OF MINING.

☞ Correspondents, exchanges and others addressing us should be *extremely careful* to write "JOURNAL OF MINING," instead of "MINING JOURNAL," to ensure safe carriage. Communications intended for publication should be plainly written, and on one side of the paper only.

BRANCH OFFICE.—MESSRS. M. A. LATHROP have been appointed our sole agents in the New England States for the AMERICAN JOURNAL OF MINING and our Spanish paper EL CORREO HISPANO-AMERICANO. Their address is 11 Court street, Boston, Mass., where all information respecting communications, subscriptions and advertisements for these papers will be gladly given to those who may wish to favor us with their patronage.

NEW YORK, SATURDAY, JUNE 27.

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BUILDING MATERIALS, GRAPHITE, SALT AND PETROLEUM ON THE PACIFIC COAST.

Under the head of miscellaneous minerals in our review of Ross BROWNE'S report, we have spoken hitherto of copper, iron and coal. It remains now for us to give our readers some idea in regard to the minerals of less importance, though perhaps not of less interest, that are disseminated through the States and Territories of the Pacific slope. The rugged, mountainous character of the country would naturally suggest the existence of building materials in great variety. And this, as we are informed, is, indeed, the case. California, it is said, possesses an abundance and variety of materials suited to building purposes. It takes rank, in this particular, among the leading countries of the world, and yet what do we learn in regard to the material out of which its principal buildings have been constructed? The City Hall in San Francisco is composed of freestone imported from Australia. Banks and other large edifices are built of blocks of granite brought from the quarries of China. The Atlantic States and Europe have not failed in the contributions. They have given in their proportion of granite, sandstone and bricks, to aid in the building up of the great commercial emporium of the West. We are inclined to think that in studying the history of the San Francisco building materials, one would get a very fair idea of the heterogeneous masses that make up the sum total of her population. In point of history the one seems indeed to be a sort of counterpart to the other. Whether, however, San Francisco can lay claim to as many blocks of China granite as she can Chinamen, we will not undertake to say. Says the report:

"There are few cities in the United States where equal opportunities are afforded for comparing the merits of the materials used in other countries with those obtained at hand, than are presented at San Francisco. None of those foreign materials are found to be as durable or as handsome as those since obtained in California. In this as in other mineral resources the cost of labor and transportation has impeded development. It is only under favorable conditions that stone for building will pay to ship to San Francisco from the interior of the State; while the cheapness, excellence, and abundance of the lumber, and the general adaptability of the soil to the manufacture of bricks, cause these materials to be used for building almost everywhere throughout the State. The introduction of iron mouldings for the decorative portions of large structures prevents a demand for stone for such purposes. The Bank of California, building, at San Francisco, is the only structure of cut-stone of any magnitude, outside of the Government fortifications, on the Pacific coast. Under such circumstances little attention is paid to opening quarries to test the quality of the stone. The consumption is confined to granite for curbing and paving the streets, and for the basements and steps of a few of the more costly buildings at San Francisco."

Granite quarries are to be found in nearly every county in the State of California, though at present the most of them are distant from railroads and rivers, while trachytes, sand, and freestones, suitable for building purposes, are found in various parts of the State. Bricks, it is reported, are now extensively manufactured in nearly every county; the best being made in the valley of the Sacramento. As regards roofing slates, it seems that though an abundance of it has been found on the coast, but little of it is fit for use. The use of shingles, asphaltum and tin, is so general on account of their cheapness and lightness, that little inducement has thus far been held out to the quarrying of slate, even if there be an abundance of it of the proper quality.

Among the great variety of minerals that have mention in the report, we find that graphite occupies no inconsiderable place. The largest deposit of this exceptional mineral that has thus far been discovered, is found near Sonora in Tuolume county. The deposit was discovered in the year 1853, and has been successfully worked since 1865, under the name of the "Eureka Plambago Mine." Quite extensive shipments of graphite to Europe have already been made. The lode or vein is of great extent. The growth of this industry will probably be such that at no distant day the California graphite mines will have a very large commercial significance. It is stated that this California graphite is much finer and purer than that obtained from the European mines, so much so that, as we have already intimated, there is now quite a foreign demand. In regard to the importance of graphite in the arts, we read as follows:

"Reference to some of the purposes for which this mineral is used in the arts and manufactures, will exhibit the influence a full supply of it will have on these important branches of industry. The manufacture of black-lead pencils gives employment to thousands of persons in Europe. Millions of these indispensable articles are annually imported. No suitable material for their manufacture has hitherto been discovered in our own dominion. Crucibles made of this material are indispensable for melting gold and silver, because they withstand the high temperature necessary to melt these metals, and at the same time do not absorb them. It is also used in the manufacture of gunpowder. By coating the grains with graphite, they are not only polished but their explosive power is greatly increased. Good blasting powder contains nearly one-tenth of its weight of graphite. It is also of importance in the art of electrotyping, being one of the best known conductors of electricity for that purpose. It is also employed as an anti-friction for the bearings of heavy machinery. It is also used for covering the moulds for iron, brass and bronze castings. It imparts a smooth surface to these metals when thus used. The other uses of graphite are numerous, but it is not necessary to particularize further."

Nor, again, as regards a full supply of salt, are the States and Territories of the Pacific likely to be behind the rest of the world. The sources of this very necessary article are very numerous. Salt beds, springs, and marshes are found all the way from Arizona to Oregon; and but for the high price of capital, labor, and the difficulties of transportation, it is suggested that salt might be produced there as cheaply as in other parts of the Union. The development of the salt interest has been such of late that there has been a gradual falling off in the importations from foreign countries, as also a great reduction in the scale of prices.

Much has been said in regard to petroleum in California. Among scientific men there has been indeed a good deal of difference of opinion in regard to quantity and quality. Large sums of money have been sunk in oil speculations; or to follow substantially the words of the report, many persons have invested time and money in searching for "oil" in localities where it does not exist, because experts said it could be found there, while others have permitted good petroleum to run waste, because experts said it would not yield oil. The following paragraphs from the paper on petroleum, will give our readers the gist of the whole matter. As regards quantity and quality, it is stated:

"That petroleum exists in California is no longer a matter of doubt. It has been obtained at various places from Los Angeles to Humboldt, and merchantable oil has been made from several localities within this range, including San Mateo, Santa Clara, Santa Barbara, San Barnardino, Colusa, Lake, Napa, Tulare, Humboldt, Kern, and several other counties. The quantity available will probably be sufficient to supply the demand of the coast. The quality undoubtedly differs from that prepared in the Atlantic States; also the means for obtaining the crude material. Experiments made with oil from different sources show that it differs in composition from the eastern oils in containing a larger per centum of carbon. It burns with less brilliancy in ordinary lamps. With lamps so arranged as to give an increased supply of oxygen by creating a larger current of air through the chimney, it produces as bright and white a light as the oils from Pennsylvania, Virginia, or Canada.

"The excess of carbon increases the value of petroleum for fuel, a use for which it is now attracting attention. In a country where fuel is dear, an abundant supply of petroleum of this character becomes an important resource."

In regard to the mode of occurrence very different from what it is upon the Atlantic coast, the following statement is made:

"The oils of California do not 'occur' in the same manner as those found in the Atlantic States. Here there are no flowing wells, nor is it probable any will be found. Some of the wells sunk in the Mattole valley, Humboldt county, reached the depth of 1,166 feet without obtaining a flow, though sunk in a district overflowing with oil on the surface. Other wells of nearly equal depth have been sunk in other counties, through various formations, with similar results.

"Without entering into speculations as to the cause of the abundance of oil on the surface, and its deficiency below, it is enough to know that oil exists in sufficient quantity. There are many natural wells or springs of it in the Coast range, some forming pools of oil; others showing but little more than "indications" of that material. From some of these springs petroleum flows in a black, viscid stream, like tar; from others, clear, colorless, and comparatively pure. In exceptional instances, it has been used without preparation in common coal oil lamps. At some places the springs are widely separated; at others, scores of them are found within the space of an acre. Generally the single springs produce the most petroleum. About some are large deposits of asphaltum, while none of this mineral is seen within miles of others, though the oil has been flowing for centuries, and its course can be traced for miles along the surface.

"Where a record has been kept, the flow of petroleum has been larger during the night than the day, and more abundant in winter than summer. Usually where petroleum is found, there are salt springs and alkaline waters."

THE SOUTHERN PACIFIC RAILROAD.

Recently, several pamphlet reports of the surveys on this route have appeared, the latest being that of DR. C. C. PARRY, Geologist of the Western Section. The document purports to be a preliminary report, issued in advance of a fuller and more elaborate one, not yet published. As the author says, in an introductory letter, it is very much condensed; in fact, so much so, that most of the gist of the matter has been squeezed out in the process of compression. His description of the Physical Geography of the country, from the "Great Plains," by way of the Rio Grande, to the Tulare Valley of California, is comprised in less than three pages; one of which is preparatory to the description proper.

The region traversed between the Rio Grande and the Colorado is a vast upland, crossed by a succession of mountain ridges and basin-shaped valleys. The mountain chains, with a granite nucleus and upturned palæozoic rocks on their flanks, have a general north-west and south-east trend, and constitute the "frame work" of the country, dividing the broad table lands into a series of plains which often end abruptly in mural faces, bounding fertile valleys, or presenting isolated buttes and fantastically castellated rocks. This feature is not, however, peculiar to New Mexico; it exists in various places in Nevada, Idaho, and in South-eastern Oregon. The Canyon of Crooked Creek, a branch of the Owyhee River, is bordered for miles by walls, requiring no stretch of the imagination to transform them into ruins with arches, doorways, windows, towers, turrets and battlements.

In the eastern section of this portion of the route, is the country of the Pueblo Indians, distinguished for its fertility and its excellent climate; going west, towards the Colorado, the surface falls, and, at the same time, becomes more barren and the vegetation more tropical. Crossing the Colorado into South-eastern California, the features are again changed. Desert plains of sand or gravel, dry water courses, water scarce and rarely flowing on the surface, alkaline and salt "sinks," or dry lakes, and isolated mountains or ridges characterize this region.

His description of "the western slope of the Sierra Nevada and the Tulare Valley," is a model of brevity, and still contains matter to surprise a Californian. He says it includes "the rich mining and timbered district of the Sierra Nevada, the *charming pastoral region* of the Tulare Valley," etc. The mining districts proper of the Sierra Nevada are hundreds of miles north of the proposed route; a few isolated "districts," or mining camps, are scattered through the Southern Sierra, but their importance is yet to be demonstrated. The timber consists of oak and pine, and is sufficiently abundant; but the adjectives applied to the Tulare are certainly rather strong, even when we consider that the writer had been a long time on the Colorado desert, and was prepared to admire anything green.

In speaking of the future supply of water in the regions near the Colorado, the author advances the theory that all of the valleys are underlaid by an aqueous sub-stratum that could be easily reached. This is not impossible, but in many cases is very improbable. That tract of country differs but very little from the adjoining portions of Southern Nevada, in its physical features. Very little rain falls, the water sheds are almost invariably of small area, and the deposits of sand and gravel that fill the valleys are of great thickness. In similar places in Nevada, wells have been dug along stage routes, to furnish water for the horses; and they are not unfrequently 90 to 100 feet deep; the supply of water is very small, and many of them are as dry at the bottom, as is the surface of the surrounding soil. It is only in the "clay lakes" and sinks that water accumulates to any great extent, and it is to these, and to the dry beds of rivers like the Mohave, that the Railroad Company must look for its supply of water.

In conclusion, after carefully reading the pamphlet, it appears to us that the author has injudiciously blundered into an unfortunate and palpable error. The route is a good one;

it passes through a region as yet unknown, except to the explorer and frontiersman, but of which we have learned enough to believe that it has immense resources, that will be developed as soon as the road is built and the Apaches exterminated; its climatic advantages over the central route are undisputed; travel can never be impeded by snows, and at least a portion of the country that will be opened by it, will one day support a large population. Not content with stating this, he has dwelt on the good features of the case so strongly, and so completely ignored the drawbacks to be encountered in the broad desert of the Colorado, that, to one accustomed to such documents, the whole pamphlet seems an obvious "puff." This should not be; such a report should be a statement of all the facts of the case, bad as well as good, together with such opinions as the writer feels warranted in expressing.

ECONOMY IN COPPER EXTRACTION.

We are in the possession of some facts in regard to the use of iron as a precipitant of copper that seem to be well worthy of note. G. BISCHOFF, of Bonn, it appears, has shown that the success with which iron can be used in the precipitation of copper from its solution, depends in a great measure upon its minute division. He demonstrates that when the division of the particles of iron is sufficiently fine, it will not only precipitate copper from very weak solutions, but, moreover, will effect as much in thirty minutes as ordinary scrap iron has been wont to do in as many hours. BISCHOFF obtains his iron by means of reducing hematite ore in a reverberating furnace. Carbon is the agent of reduction used. He obtains an iron that is light and very spongy, and that must be cooled before exposure to the atmosphere in order to prevent its burning up. It is claimed that another advantage to be derived from the use of iron thus prepared lies in this, viz: That the precipitate of copper is not rendered impure by means of an admixture of basic oxide of iron as is the case when the precipitation is effected by the agency of common scrap iron. Again, it is said that poor desulphurized ores, which by lixiviation give only a very weak solution, can be treated in this manner to very great advantage. We learn that the Board of Health of one of the English towns have adopted this method in order to purify the water used by the inhabitants. In this instance the water contained only one milligram to the gallon, but even that, it is considered a matter of economy to save. It would seem that the copper that exists in small quantities in some of the springs in Tennessee, and elsewhere, mightbe obtained at a profitable rate of cost.

If the use of spongy iron as a re-agent will cheapen materially the cost of the extraction of copper from solutions containing it in very small quantities, it is a fact that should be taken into consideration at once by those who have to do with very low grade copper ores and residues. The thought, moreover, suggests itself that this spongy iron, so effective in case of copper extraction, might be used successfully for other purposes, as, for instance, the making of analin, the reduction of the chlorid of aluminium. etc. If there is a point to be gained by this, either in metallurgy or the technical arts, we hope some one will look into the matter at once. The reduced price of copper, which has, indeed, strong appearance of being permanent, calls for improvements in the methods of its production, in order that thereby the industry may not suffer permanent injury.

MONSTER ROPE.

We alluded, last week, editorially, to the prospective use of endless wire ropes in the underground levels of the English coal mines. Ropes are already in use on those levels that probably have a length of more than three thousand feet. We are, however, not to be out-done in the art of rope-making. We learn that the works of JOHN A. ROEBLING, of Trenton, N. J., have just turned out the longest, largest and weightiest wire rope ever made in one piece. This monster rope is 3,700 feet in length; its diameter is over 2½ inches, and its weight some 20 tons. Nor is this rope an index of the limit of power that lies in the machinery used in its manufacture. We are told that it is equal to the task of making a rope twice as long and large as this one. The rope is to be used upon an inclined plane, for the purpose of raising coal out of the Wyoming valley. The manufacture of such a huge rope as this, is an evidence that MR. ROEBLING knows full well what he is about, when he plans the binding together of Brooklyn and New York City with his coils of wire.

Trustworthy Information.

We learn that a certain Dr.—what sort of one we are not informed—lately stated for the information of the Board of Education at the Normal State University of Illinois, that the atmosphere was composed of oxygen and hydrogen. He accounted for the explosion that takes place, consequent to a discharge of electricity, on the ground that, as he believed, the electricity decomposed the air, leaving the hydrogen as an explosive compound behind! We trust the Board of Education were too sensible to be made any the wiser by this precious bit of information.

The Age and Returns of the Freiberg Mines.

It has been calculated by Prof. Breithaupt that during the 640 years which they have been worked, dating down to 1825, the mines of Freiberg produced not less than 82,000 cwts. of silver, and that the amount yielded in 1850 alone not less than 800,000 thalers.

EDITORIAL CORRESPONDENCE NO. IV.

THE WEATHER—THE ISTHMUS RAILWAY ROUTES.

OFF SAN FRANCISCO, May 30, 1868.

This is the last letter we shall write on shipboard; and if you receive this you will know by that same sign that we have set our feet again on solid ground. At this moment, the noble steamer Colorado, one of the best in the three fleets of the Pacific Mail Company, is rising and falling beneath us, under the influence of a heavy swell and a stiff nor'wester. Up to this time, our voyage on both oceans has been like a picnic on a pond. But since we passed the Gulf of California, and the climate changed with a bound from torrrid to north temperate (and sometimes more north than temperate), the sea appears to have recovered from the spell laid upon it—a "spell" of fair weather—and looks more as we have been wont to see it in other days, restless, heaving, opaque and foam-crested. It is rough, but not stormy, weather. The sun shines brightly overhead, and wreaths of white fog lie along the horizon, that would close about us were they not continually blown away by this roaring breeze from the northwest.

The suddenness of the change in temperature is so great that the tropical life of last week seems like a dream. The very bananas we bought at Acapulco are hanging in our state-room yet; the white gossamer coat in which we were wont to lounge of an afternoon under the awning on deck, swings from the nail where we suspended it, "to have it all ready for to-morrow." To-morrow came; and white coats and awnings were things of the past. Thick woolens, boots, overcoats and wrappers have taken the place of the airy garments, straw hats and slippers in which, a few hours ago, we wooed the breezes and the shade; and, reversely, all the wisdom of those hours, we now seek anxiously for loitering-nooks where we may be out of the wind, and in the sun! But we will not weary you with the small talk of the sea. Let us rather inflict upon you a few observations, which may indeed be tedious, but have at least, in their way, some ponderous value.

The Panama Railroad is now the only highway between the two oceans; and the business it controls is virtually a monopoly. The traffic between the Atlantic States and California is trifling, compared with the great Spanish-American commerce with Europe, which passes over this road. The charge for passengers from Aspinwall to Panama, 47 miles, is twenty-five dollars in gold! No wonder the Panama railroad is one of the most profitable in the world, and no wonder the Company was willing to pay a good bonus for the renewal of its charter. For, since all the short, easy routes across the isthmus are in the territory of New Granada, the exclusive privilege of transit, conferred by the government of that State, is almost conclusive protection against competition. We say almost; for there are routes across the isthmus which British capital, foiled in its last attempt to obtain control of the Panama line, may seize upon and improve. Outside of the territory of New Granada, we have the line across the Isthmus of Tehuantepec, the Nicaragua transit route (now in the hands of Americans), and, last but not least, the route adopted in 1858 by the British Honduras Inter-oceanic Railway Company, extending from the Bay of Honduras, on the Atlantic side, to the Bay of Fonseca, on the Pacific.

For some reason or other, this Honduras Railway was not built ten years ago; but the scheme is now revived, and actively in progress; and in the approaching contest for commercial supremacy in the East, we may perhaps see it play an important part. It is worth while to consider the respective advantages of the different routes. Of the much-agitated ship canal question, we can say little here. The isthmus of Darien is the quarter where we must look for the canal route; and probably it will be found somewhere near the line from the Gulf of San Miguel to Caledonia Bay. The brief but exceeding clear and comprehensive report of Admiral Davis, in response to the Senate Resolution of March, 1866, seems to indicate as much, while it looks very plain that we have not yet the necessary knowledge of the interior to locate most advantageously a ship canal. In regard to railways, the case is somewhat different. There may be a great many railways hereafter, intersecting and traversing the isthmus: there will probably never be more than one canal. Different railway routes may possess relative advantages and disadvantages; the canal route must be absolutely the best that nature offers us. Now the Honduras route has this great drawback, as compared with the Panama, that it is nearly five times as long, the located line being 231 miles. Moreover, while the average grade is by no means extreme, there is one section where it is 84ft., and another where it reaches 95ft., while the heaviest grade on the Panama road is 60ft. None of these figures can be called formidable. On the other hand, the Panama railroad has a most indifferent harbor in Navy Bay, at Aspinwall; and the roadstead at Panama, though capacious and safe enough, is subject to very great tides, and so inconvenient, unless provided with docks. Still more serious is the prevalence, at certain seasons, of dead calms, which make it impossible for sailing vessels to change their anchorage, or put to sea, without the assistance of tugs.

The Honduras route begins and ends with excellent harbors (Port Cortes and La Union), located in latitudes more remote from the equatorial calms. Moreover, it passes through regions of great fertility, variety of climate and productions, and remarkable salubrity. The mineral resources of the country are considerable, and there are many towns and a considerble population along the road. The Panama route, on the other hand, runs through a miasmatic wilderness, without any actual or prospective industrial development, and destined never to afford, in the shape of way traffic, any income to the Company. All these circumstances increased the original cost of the road to such an extent, that its British rival, though so much more extensive, might be constructed with proportionally less expense; and the difference in running expenses and repairs might be made up by a large and increasing way-traffic. But after all, Panama is becoming established as a great emporium of trade. Lines of steamers running up and down the coast, carry the products of England, France and the United States. This commercial habit will be hard to change; and so, on the whole, we need not fear the competition of the British by any other route.

R.

THE NEW YORK SILVER MINING COMPANY OF NEVADA.

We have heard of late of some unusually good and trustworthy reports from the Troy mine, situated upon Lander Hill, Nevada. This mine is owned and worked by the New York Silver Mining company. A shaft has been sunk to the depth of three hundred and twenty-two feet. This is a depth sufficient to establish, almost beyond question, the continuity of the vein in the direction of its dip. It is substantial evidence that the Company are working a true vein. We are glad to to have documentary evidence before us, to such an extent that we are enabled to speak with confidence in regard to the great richness of the ore that is now being taken from the mine. One thousand and forty-four pounds of selected ore gave an assay value of $3,082 per ton. This mass of ore was reduced at the Manhattan mill. The amount of silver obtained was 83 per cent. of the assay value, or $1,335 30. We are informed that this, for the quantity, is the highest yield of any ore that has thus far been worked in the district. In addition to the above, we have good authority for stating that thirteen tons of second class ore, reduced at the same mill, gave the splendid return of $524 67 per ton. The cost of milling is $45 per ton. We understand that the New York Silver Mining company are now offering for sale at par $20,000 of their mortgage bonds, bearing interest at the rate of seven per cent. per annum, payable semi-annually *in coin*. These bonds are secured by mortgage on their valuable mining property. The office of the company, for the sale of these bonds, is at No. 80 Broadway, room 38, New York City. We learn, moreover, that the company transfers with each bond of $500 sold, tens share of its capital stock to the purchaser, without charge and free of assessment or tax. We understand that money realized by the sale of the bonds, together with what the company have now on hand, is to be used in making a full development of the Troy mine. We hope this company will have complete success in their undertaking, for in their success we should have an augury of a bright future for the Reese River district.

NEW PUBLICATIONS.

FIVE HUNDRED AND SEVEN MECHANICAL MOVEMENTS, *Embracing all those which are most Important in Dynamics, Hydraulics, Hydrostatics, Pneumatics, Steam Engines, Mill and other Gearing, Presses, Horology and Miscellaneous Machinery.* By HENRY T. BROWN, Editor *American Artisan*: BROWN, COOMBS & Co., Publishers, 189 Broadway, New York.

This is a new work that has been compiled with much labor and good judgment. From long and practical experience with mechanism in all its varied forms, an extensive knowledge of patented machinery and inventions generally, the author is just the person to issue so useful a work. We give an extract from the preface, which explains the object of the publication: "The want of a comprehensive collection of illustrations, and descriptions of Mechanical Movements, has long been seriously felt by artisans, inventors and students of the mechanic arts. It was the knowledge of this want which induced the compilation of the collection presented. The selection of the movements embraced in this collection has been made from many and various sources. Although it embraces about three times as many movements as have ever been contained in any previous publication, and a considerably larger number than has ever been contained in any foreign one, it has not been the object of the compiler to merely swell the number, but he has endeavored to select only such as possess a really practical value, and with this end in view, he has rejected many which are found in nearly all the previously published collections, but which he has considered only applicable to some exceptional want." The work is neatly and strongly got up. Its exceedingly low price ($1 00) puts it within the reach of every mechanic. The first illustration given, of mechanical movements, is the transmission of power by simple pulleys, and an open belt. The last, or five hundred and seventh, is a form of an epicyclic train of wheels designed for producing a very slow motion. So highly do we prize this work, that if our pockets were as full of money as our hearts are of philanthropic desires, we should place this book in the hands of every inventor and mechanic, not forgetting the unfortunate students of perpetual motion, who, doubtless, some day hope to add a remarkable mechanical movement to those already known.

HORACE GREELEY'S "RECOLLECTIONS OF A BUSY LIFE."—This is, the title of a work about to be published by J. B. FORD & Co., 164 Nassau street, New York. We understand the substance of the forthcoming work appeared originally in the New York *Ledger*. It is now to come before the public in book form, in a handsome quarto volume, with cafeful emendations and many additions. The reading of a work that will give almost a complete picture of the mental life of a man who has thought so much and so well, cannot be other than peculiarly pleasurable and profitable. We are very glad to know that the thought-life of Horace Greeley, from boyhood on, through all the busy years of his eventful career up to the present time, is to be put in a form that will place it within the reach of all. The work, we are informed, will be forthcoming about the first of August.

Original Papers.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

ON THE RICHARDSON PUDDLING PROCESS.

BY PROF. O. HINRICKS.

This process is apparently a combination of the Bessemer process, and the ordinary puddling process. It is performed in the common puddling furnaces; but the paddles used are hollow, and, by means of proper bellows, introduce a blast, under a pressure of five or six pounds to the square inch, into the iron, so as to make each paddle a small "converter" in regard to the iron around it. The pig iron is thereby very rapidly converted, while the mass boils violently. In about eight minutes all the oxydable substances have been oxydized

the iron remaining on the hearth as usual, and is collected into lumps in the common way. While these lumps are heated near the bridge, previous to their removal from the furnace, the phosphorus compounds seem to run off by liquation; at any rate, analyses show that the Richardson wrought iron is very pure, and contains only very small quantities of phosphorus and sulphur, even when smelted from pig iron containing considerable of these obnoxious elements. Finally, the lumps are hammered or rolled, as if resulting from the common puddling process.

The principal advantages of the Richardson method over the common puddling operation consist in the following: A purer metal, even from poorer pig iron; and a saving of more than one-third of the time usually required. It may indeed prove a successful competitor of the Bessemer process, because no costly machinery is needed—nor is it, indeed, necessary to first convert the pig iron into fine iron. Again, a somewhat higher per centage of iron is obtained by means of the Richardson process.

This process has already been tested on a large scale at the works of a Glasgow company, and also at the Parkhead works. At these latter works they found, for rails produced from the same pig iron:

I. When produced by the common puddling process, the rails broke easily under the hammer, and exhibited on the fracture a coarse, crystalline, non-homogenous structure.

II. When produced by the Richardson process, from the same pig iron, the rails could be bent at a right angle without breaking; the fracture was as fine grained as steel, and, under the magnifier, these rails showed a very uniform texture and grain.

This method has already been introduced in several English and Scotch iron works, and probably will soon become quite generally used.

NOTES ON LOWER CALIFORNIA.—NO. VI.

BY W. M GABB, ESQ., PHILADELPHIA, LATE OF THE CALIFORNIA GEOLOGICAL SURVEY.

[Continued from page 378.]

Space forbids me to describe in detail all of the minuter features of the geology of the country. Suffice it here to say, that except the retreating of the summit from the coast above Moleje, and the presence of the belt of volcanic cones from San Ignacio to the volcano of Las Virgenese, there are no matters of special interest until we reach Santa Gertrudis, over seventy miles above San Ignacio, and just west of the summit of the range. Here a mass of granite appears in the bottom of an arrayo, very similar to that at the Sauce. The overlying sandstones are not disturbed by it, but lie horizontally over it, or abut against the irregularities of its surface. Northward from Santa Gertrudis the mesa sandstones almost disappear, except in the higher mountains to the east. In this region they seem to retain their former thickness but little abated, to near the bay of San Luis, where, very much metamorphosed, disturbed and uptilted, they gradually run out in a series of low ridges. Very soon after leaving Santa Gertrudis, on the road to San Borja, these rocks thin out, capping only a portion of the higher mountains, the great mass of the country being granite. The other stratified rocks, both post-pliocene and volcanic, at times occupy similar positions, and sometimes the whole three are found in their regular sequence on the summit of the same hill. The volcanic, however, has been all of this time gaining ground, while the others are losing, and eventually, at the Paraiso, and over the adjoining mesa, it is the only rock fonnd capping the granite. At Trinidad and near Rosarito, below San Borja, a few outliers of post-pliocene form hills two and three hundred feet high, resting on granite and usually capped by volcanic rocks. Again, at San Andres, forming low, flat hills, underlying the valley of San Andres and forming the broad plains of Santa Ana, we have the post-pliocene extensively developed and extending to, and abutting against the highly uptilted mesa sandstones at Calamujuet. Bordering the northern edge of the mesa of Santa Ana, and north of the bay of San Luis, extending almost from coast to coast, is a mass of granite, which rises at Santa Maria to a height of about three thousand feet, and is here capped by thin beds of the same sandstones which form the plain of Santa Ana. In most cases, this sandstone on the summit of the mountains is capped with a thin deposit of volcanic rocks. The same structure appears to continue northward, as well as we could determine at a distance, as far as the range could be seen. Going westward, towards San Fernando, the valleys were at first all scooped out in granite, the higher hills being found at Santa Maria; but by their steadily diminishing height, the post-pliocene first, and eventually the volcanic rocks, reached the plains, and the granite disappeared.

Crossing the plains of Buena Vista, the road enters the mountains of the west side, near San Fernando, and we found the structure somewhat different from anything we had encountered further South. The structure is essentially that of a broad granite cone, flanked by stratified volcanic rocks, with many beds of ash, and not unfrequently uptilted at high angles. This is the case on both sides of the chain, and continues to beyond San Diego. Westward, beyond the volcanic rocks and adjoining the coast, is a broad belt of horizontal post-pliocene beds, which, with occasional interruptions, extends to and even beyond San Diego, being cut off several times where the crystalline rocks reach the coast. We had no opportunity of examining the geology of the eastern side of the range, north of San Fernando, but I have no reason to suppose that any changes of importance take place in that region. From Rosario, where the road reaches the west coast, after passing through San Fernando, our route lay along the western flank of the mountains, sometimes on the beach, sometimes across the late tertiary tables, and occasionally through the rocky foot hills of the range. There was no important variation from the structure described above, along the route, except at the salt ponds of San Quentin, where there is an isolated group of low hills composed of a dark gray cellular trachyte, much of it filled with nests of olivene, and some parts having an obscure basaltiform tendency. These hills have no obvious connection with the main range, and the rocks of which they are composed are entirely different from any rocks of a similar origin encountered elsewhere.

[TO BE CONTINUED.]

Manufacturing and Mechanical Notes.

No. XXV.

The Holske Machine Co.

We have already alluded to this company as the manufacturers of the stone drilling machine represented on our first page. Their works, although not extensive, comprise some three or four stories of a building in a good business locality, near the East River, N. Y. city. We were surprised, on a visit there, to find so large a number of superior tools, and such an amount of work going on. Who would have expected to find, on the comparatively limited area assigned for machinery, machinists, and machinist's tools, such ingenious mechanical devices and such a stock of miscellaneous work? And yet, believe us, there are "tumbling beam engines" that have attracted notice at exhibitions and that have tumbled into English engineering criticisms, rotary engines, M. B. DODGE's hungry looking quartz mills, models of arcade railroads of Albany fame, sections of pneumatic tubes which we hope to see between the New York Post Office and City Hall, brick machines on a diminutive scale turning out numerous little bricks, a thousand of which could be carried in a man's hat of moderate style and dimensions. All of these, E. W. CRITTENDON, the sole proprietor of said machine, assured us were perfect little bricks. All this and much more we saw and examined with pleasure and profit at No. 528 Water street, New York city.

Siemens' New Process for Making Cast-Steel Direct from the Ore.

The author of this invention proposes to bring it shortly before one of our learned societies; in the meantime we may state, in a few words, the nature of the process. He makes the steel on an open hearth of a furnace, effecting simultaneously the reduction of the ores in vertical heated hoppers, and dissolving the metal, without exposing it to the flame, in a metallic bath provided in the furnace. Cast-steel can be made also on open hearths by causing wrought-iron, steel, or white cast-iron, to descend down inclined planes, or through hoppers, where it is gradually heated, and passes thence into a fluid bath of molten cast-iron, where it is exposed to the action of very intense heat, by which it is dissolved and made into cast-steel. The regenerative gas furnaces are applied to heat the materials, which descend into the furnaces by gravity, and, at the same time the remainder, which has not been reduced by contact with cold material, passes through regenerators into a chimney as usual, the effect being that the temperature of the furnace is not reduced by the introduction of cold material.—*Scientific Review.*

New Street Pavement.

The new mode of laying granite pavement has been tried in Duke street, Smithfield, in which it will be subjected to the severest test, as the heaviest traffic from the new goods station of the Great Western railway will pass over it. The plan consists of laying down granite blocks of 6 in. by 4 in. on a simple bed and filling in the interstices with a very coarse gravel, and then pouring on a very hot or liquified cement of gas asphalte. This liquified asphalte runs down between the blocks to the bottom, and firmly cements the whole pavement into one mass, which is thus rendered impervious to water from above or from below, consequently the rain at once runs off, and the bed always remaining dry, no pumping up of mud can occur from between the blocks of granite, so that the pavement always remains clean, and neither mud in wet weather, nor dust in dry weather, can arise where this mode is adopted. This plan has been tried at the suggestion of Mr. Pedlar, who prevailed on the Commissioners of Sewars to lay down a specimen, and, judging from its success at Manchester, it is hoped that it will soon also succeed in London.—*Engineering.*

Another Useful Tree.

A South American correspondent writes from Quito that most of the roads are fenced with aloe hedges. While the majority of tropical trees have naked stems with a crown of leaves on the top, the aloe reverses this and looks like a great chandelier as its tall penduncle, bearing greenish flowers, rises out of a graceful cluster of long, thick, fleshy leaves. When cultivated, the aloe flowers in much less time than a century: but, exhausted by the efflorescence, it soon dies. Nearly every part serves some purpose: molasses flows out of the leaves when tapped, and as they contain much alkali soap is also manufactured from them; the flowers make excellent pickles, the pith of the stem is used by barbers for sharpening razors, the roots are woven into socks, and the sharp spines are used as needles.

Laborers Wanted in Arizona.

Laborers are scarce in Yavapai county, at present, especially in the part of it surrounding Prescott. Farm laborers receive from $65 to $75 per month, and board, and cannot be engaged at that price.

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men, and Others.

77,822.—FURNACE FOR BURNING FUEL FOR HEATING METALS, AND FOR OTHER PURPOSES.—Thomas Joseph Leigh, London, England.
I claim the combination of fuel in a bed of molten matter, and the construction and working of furnaces adapted to this purpose, as herein described.

77,868.—SHOE FOR AMALGAMATOR.—John H. Bullock, Gold Hill, Nevada.
I claim the combination and arrangement, on the face of a shoe or grinder for amalgamators, of the grooves H H, with the supplementary grooves I I, by which the quicksilver is taken from different points at the outer edge of said shoe, and delivered at different points at the rear of the same, to be in the way of the following shoe, substantially as described.

77,904.—COMPOSITION FOR REFINING AND TOUGHENING IRON.—John H. Nolf, Philadelphia, Pa., assignor to himself and John D. Williams, same place.
I claim the treatment of iron during the process of puddling with a composition, consisting of the within-described ingredients, or their equivalents, in the manner and for the purpose described.

77,922.—APPARATUS FOR HANDLING IRON IN ROLLING-MILLS.—Elias Sanford, Meriden, Conn.
I claim the pan C, with the valve a attached, and its peculiar construction, with the perpendicular bar D and double-jointed lever F, by which it is carried around and over the upper roll, and presented to the man in front of the machine, substantially as herein specified.

77,932.—PUDDLING AND BOILING-FURNACE.—William Swindell, Allegheny City, Pa.
I claim, 1st, A bottom plate for a puddling or boiling-furnace, cast with a series of grooves in or along its lower surface, in which to arrange a series of water-pipes, substantially as and for the purposes hereinbefore set forth.
2d. The use of a series of tubular water-chills, a', when arranged in grooves cast in the lower face of the bottom plate of a boiling or puddling-furnace, substantially as and for the purposes hereinbefore described.
3d. Supporting the boshes of a puddling or boiling-furnace by a ledge or rim c, on the upper face of the bottom plate, and extending around it in the outside line of the boshes, substantially as and for the purposes hereinbefore expressed.
4th. Jointing the boshes of a puddling or boiling furnace to the bottom plate and to each other by ribs e, so shaped as, in connection with the lips c', to form a dove-tail joint, substantially as and for the purposes set forth.
5th. Making chill-faced boshes for puddling or boiling-furnaces, by casting them against a metallic chill, substantially as and for the purposes hereinbefore set forth.

All Sorts.

☞ The steamer Great Eastern, at present, lies nearly high and dry in the Sloyne, a useless hulk fit only for barnacles. Her owners are without funds to fit her for sea, her value as a gift is on a par with that of the celebrated "white elephant," and her inevitable fate must be her speedy demolition, for her materials and engines.

☞ During the last meeting of the Anthropological Society, of London, a paper was read on the "Psychological Unity of Mankind," tracing a common origin for all races of mankind, and that the existing differences merely represent successive stages of development.

☞ A theoretically benevolent man, on being asked by a friend to lend him a dollar, answered briskly, "with pleasure" but suddenly added, "dear me, how unfortunate! I've only one lending dollar, and that is out."

☞ The annual value of ladies' stays made for British consumption, only is £1,000,000 sterling, for which 36,000,000 yards material are required, and 35,000 persons employed.

☞ Candles have been discarded in some of the principle mines of Nevada. Oil is found to be not only cheaper but affords a better light. It is burned in small tin lamps.

☞ A cavern or grotto has been discovered some twenty miles north of Ottawa, Canada. It is said to rival the Mammoth Cave of Kentucky.

☞ The noise of the cannon has been heard a distance of more than two hundred and fifty miles, by applying the ear to the solid earth.

☞ The female coal miners of England get 1s. 2d. per day.

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The Troy Mine has been opened to the depth of 322 feet, and has paid a profit over and above working expenses during the past four months, and is now producing the richest ore of any mine on Lander Hill. It has been opened sufficient to prove that it is a permanent vein, and with further development, can be made one of the most successful mining enterprises in the State of Nevada. The Company transfer, with each Bond sold, ten shares of its Capital Stock (the par value of which is $100) to the purchaser, without charge, free from assessment or further tax. The money realized by the sale of these Bonds, with the amount the Company now have on hand, will give them ample means to fully develope the Troy Mine, and realize large profits at a very early day. For further information apply at the Office of the Company.
THOMAS SPROULL, President.
je27:4t S. R. HUTCHINSON, Secretary.

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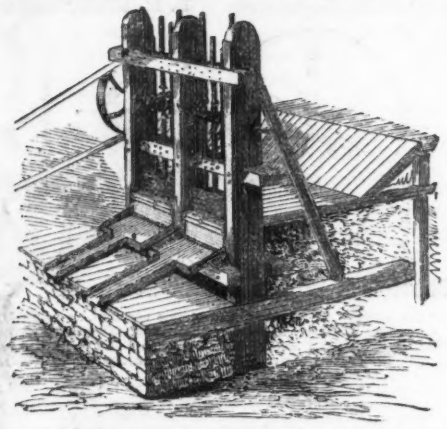

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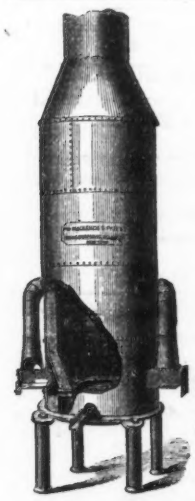

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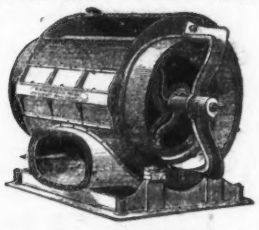

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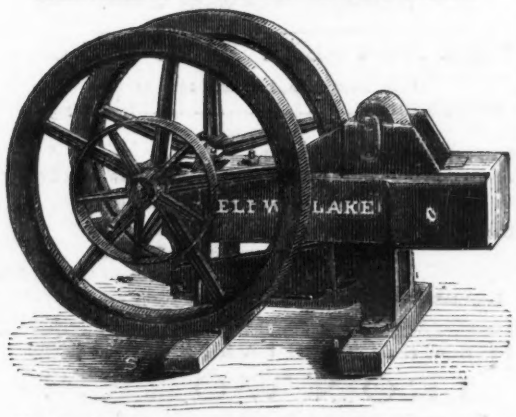

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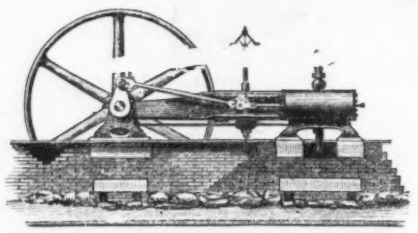

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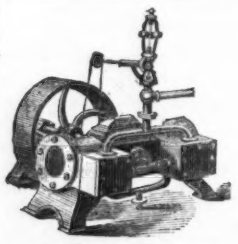

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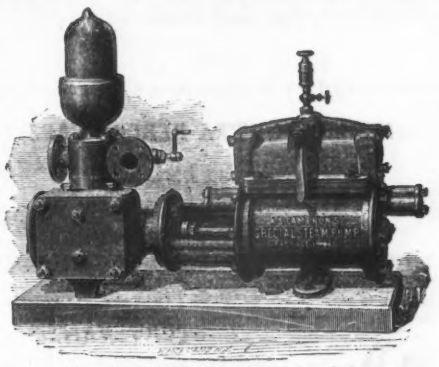

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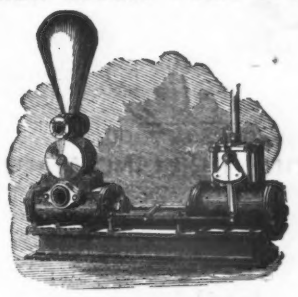

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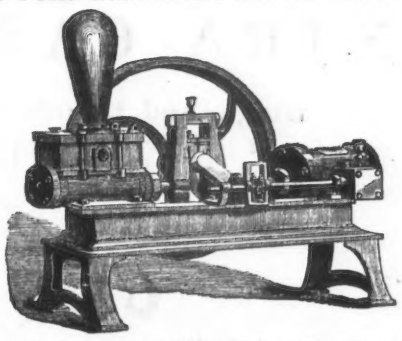

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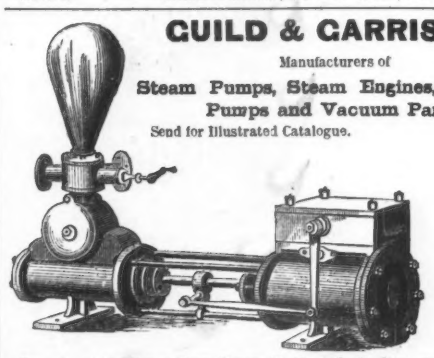

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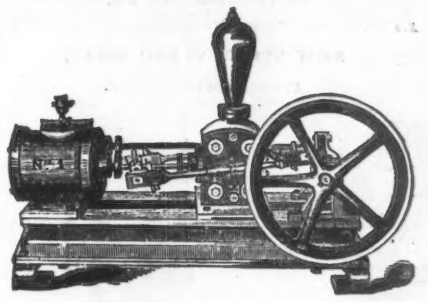

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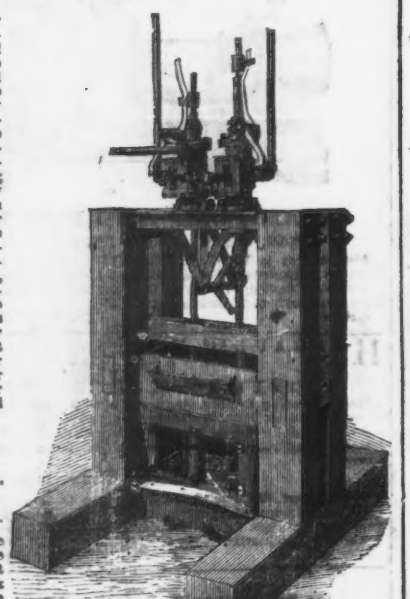

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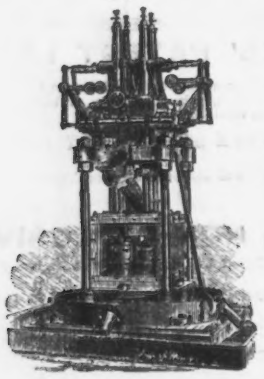

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